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# The National Locksmith®

February 2001  
Volume 72  
No. 2  
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**CODES!**  
Timberline, 100TA-999TA  
page 164

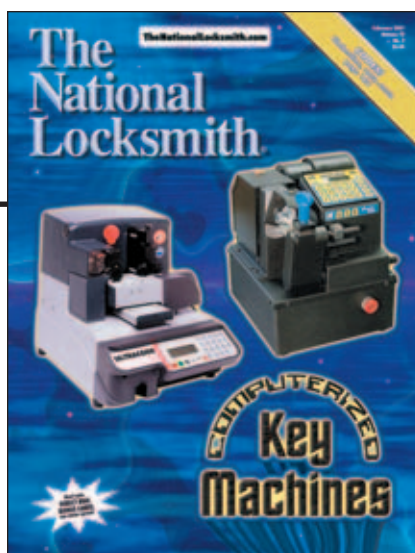


COMPUTERIZED  
**Key  
Machines**

Don't miss  
DIRECT MAIL  
BONUS CARDS  
see center spread



**On The Cover...**



The HPC CodeMax™ was the first offering of a computerized code cutting machine. Ilco has now entered this arena with its new Ultracode.

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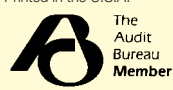
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# CONTENTS

The National Locksmith February 2001 • Vol. 72, No. 2

## FEATURES

**COVER  
FEATURE! 20**

The Ilco Ultracode

**COVER  
FEATURE! 26**

Advancements in Code  
Cutting by HPC

**48**

Quick Entry Update

**52**

Tubular Locks, part 6

**58**

The Ilco 4000 Electronic  
Pushbutton Lockset, part 1

**72**

Transponder Technology

**76**

The National Door Controls  
Solution

**96**

Odds & Ends

**104**

Professional Pricing  
Policies & Procedures

**111**

Modern Safe Locks

**130**

The 2001 Ford Escape

**146**

1999 BMW F650

**156**

Basic Electronics, part 1

**CODES 164**

Timberline 100TA-999TA

**175**

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## DEPARTMENTS

**5** COMMENTARY

**6** MANGO'S MESSAGE

**10** LETTERS

**14** SECURITY CAFÉ

**102** BEGINNER'S CORNER

**108** THE LIGHTER SIDE

**116** TECHNITIPS

**126** Road Rally

**127** THE CASH STATION

**163** BUSINESS BRIEFS

**169** THRU THE KEYHOLE

**176** TEST DRIVE

# COMMENTARY



## Lots of new products from TNL

We have a few product related announcements to tell you about this month. First of all, Dave McOmie has a new book out called ***Dave McOmie on Safe Locks***. This new volume contains about 300 pages, literally jam packed with photos and information on an enormous variety of safe locks. For each of these locks, Dave tells you every known opening method, and even shows you X-ray views. See page 134.

***InstaCode 2001*** has been released. It offers a range of new features this year. For example, for auto codes, you can now look up your information by make, model and year. With the addition of a couple hundred new code series and thousands of new key blanks, you'll find InstaCode 2001 to be amazingly fast and powerful. See page 33.

The ***2001 AutoSmart***<sup>TM</sup> is here, also with many improvements and additions. Among the new benefits of owning a 2001 AutoSmart<sup>TM</sup> is a free mid-year update. All purchasers will be able to get a free update mailed by the publisher next summer, and this will keep you up to date on mid-year auto changes and introductions. AutoSmart<sup>TM</sup> tells you everything you need to know about every car to make the first key. See page 19.

New this month is ***The 15 Minute Safe Opening*** by Jake Jakubowski. You'll learn the trick to shear the bolts on a range of

safes that allows you to open the safe quite quickly. Lots of photos and illustrations are included. See page 107.

Also brand new is ***IC Cores: Small Format*** by William Lynk. This one volume covers cores from selling and installing, to the full range of service techniques you need to know, including masterkeying. See page 107.

Publishing for the locksmith is always rewarding and challenging. You need a great deal of specific information, and you need it on a wide variety of subjects, ranging from locks to keys to cars to safes.

At *The National Locksmith*, we work hard to find the material you need, and then to deliver it in a way that will help you learn more, save time, and make more money on the job.



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---

**Marc Goldberg**  
Publisher



# Mango's Message

**T**wenty years ago I drove a cab for a living. It was a cowboy's life, a life for someone who wanted no boss. What I didn't realize was that it was also a ministry. Because I drove the night shift, my cab became a moving confessional. Passengers climbed in, sat behind me in total anonymity, and told me about their lives. I encountered people whose lives amazed me, ennobled me, and made me laugh and weep.

In all the years I drove, none touched me more than a woman I picked up late one August night. I was responding to a call from a small brick fourplex in a quiet part of town. I assumed I was being sent to pick up some partyers, or someone who just had a fight with a lover, or a worker heading to an early shift at some factory in the industrial part of town.

When I arrived at 2:30 a.m., the building was dark, except for a single light in a ground floor window. Under these circumstances, many drivers would just honk once or twice, wait a minute, and then drive away. But I had seen too many impoverished people who depended on taxis as their only means of transportation. Unless a situation smelled of danger, I always went to the door. This passenger might be someone who needs my assistance, I reasoned to myself, so I walked to the door and knocked. *"Just a minute,"* answered a frail, elderly voice. As I waited I could hear something being dragged across the floor.

After a long pause, the door opened and a small woman in her 80's stood before me. She was wearing a print dress and a pillbox hat with a veil pinned on it, like somebody out of a 1940's movie. By her side was a small nylon suitcase. The apartment looked as if no one had lived in it for years. All the furniture was covered with sheets. There were no clocks on the walls, no knickknacks or utensils on the counters. In the corner was a cardboard box filled with photos and glassware.

*"Would you carry my bag out to the car?"* she asked. I took the suitcase to the cab, then returned to assist her to the car. She took my arm and we walked slowly toward the curb. The whole time she kept thanking me for my kindness.

When we got in the cab, she gave me an address, then asked, *"Could you drive through downtown?"*

*"It's not the shortest way,"* I answered quickly.

*"Oh, I don't mind,"* she said. *"I'm in no hurry. I'm on my way to a hospice."*

I looked in the rearview mirror. Her eyes were

## Memorable Moments

glistening. *"I don't have any family left,"* she continued, *"And the doctor says I don't have very long to live."*

I quietly reached over and shut off the meter. *"What route would you like me to take?"* I asked. For the next two hours we drove through the city. She showed me the building where she had once worked as an elevator operator. We drove where she and her husband lived when they were newlyweds. She had me pull up in front of a furniture warehouse that had once been a ballroom where she had gone dancing as a girl. Sometimes she'd ask me to slow down in front of a particular building or corner and would sit staring into the darkness, saying nothing.

As the first hint of sun was creasing the horizon, she suddenly said, *"I'm tired."* *"Let's go now."*

We drove in silence to the address she had given me. It was a small convalescent home, with a driveway that passed under a portico. Two orderlies came out to the cab as soon as we pulled up. They were solicitous and intent, watching her every move. They must have been expecting her. I opened the trunk and took the small suitcase to the door. The woman was already seated in a wheelchair. *"How much do I owe you?"* she asked, reaching into her purse.

*"Nothing,"* I said.

*"You have to make a living,"* she answered.

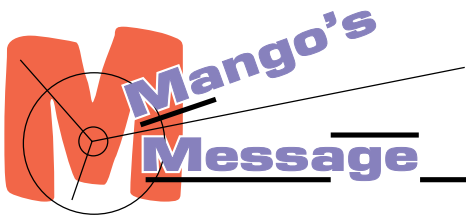
**Continued on  
page 8.**

*Greg Mango*

**Greg Mango  
Editor**







Continued from page 6

"There are other passengers," I responded.

Almost without thinking, I bent and gave her a hug. She held onto me tightly. "You gave an old woman a little moment of joy," she said. "Thank you." I squeezed her hand, then walked into the dim morning light. Behind me, a door shut. It was the sound of the closing of a life.

I didn't pick up any more passengers that shift. I drove aimlessly, lost in thought. For the rest of that day I could hardly talk. What if that woman had gotten an angry driver, or one who was impatient to end his shift? What if I had refused to take the run, or had honked once, then driven away?

We're conditioned to think that our lives revolve around great moments. But great moments often catch us unaware, beautifully wrapped in what others may consider a small one.

.....

The author of the story above is unknown, but I share it with you because I believe it conveys a powerful message, and because it reminded me of a similar occurrence I recently experienced. So this next one is real.

During a lunch hour one afternoon, I decided to make a stop at Home Depot to purchase new water filters for my whole house filtration system. As I was leaving the store heading towards my car, I noticed a rather tattered older gentleman. He was stopping people as they headed towards their vehicle. Some stopped as he flagged them down, while others simply ignored him and walked on by. I didn't know if he was selling something or asking for something, but all eventually left him standing there with a perplexed look on his face.

As I grew nearer he approached me and asked if I would give him a ride to his house to pick-up a spare set of keys because he had locked his in his car. I immediately withdrew a bit when he asked for a ride, and was going to suggest that he just call RSM Locksmith down the street to open it for him... but I didn't. I felt a sense of urgency and desperation in his voice and surmised that he was probably strapped for cash.

I was still a bit reluctant to give him a ride home, but I had no car opening tools or picks with me (some locksmith I am) to help. To assure the situation was legit, I asked where his vehicle was so I could confirm that his keys were in fact locked inside... they were. I checked all the doors on the slim chance that maybe one in four would be unlocked... one wasn't. At this point I agreed to give him a ride to get his spare keys. His immediate gratitude was apparent because his knees buckled in relief as the agony of defeat escaped him.

I never told him who I was, what I did for a living, or the fact that in an office just a few blocks away I had a full set of car opening tools and could easily rectify the situation. My natural defense mechanisms were still kicking in and I wasn't sure that I wanted this stranger to know where I worked. In fact, over the course of this event he never learned anything about me. All he ever knew is that I was willing to help.

In the fairly short ride to his house my fertile imagination was in overdrive. If he locked his keys in his car, how was he going to get into his house? Was I going to be the next face plastered on the front page of the newspaper or 10:00 news as a man found hacked to death on the side of the road... vehicle still missing! Sometimes I really do think that we watch and read too much news. It's making for a very paranoid, untrusting nation... or is it just me? But then again, how was he going to get into his house?

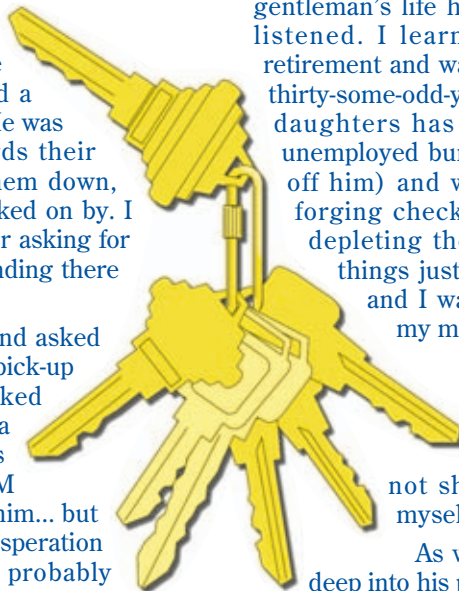
I asked and he said that his son was home, but he didn't have a car. O.K. I'll buy that. It sounded legit and it alleviated some of my imaginary fears.

While avoiding the potholes, reckless drivers, cell phone users and make-up artists on the road, this gentleman's life history unfolded, as I just sat back and listened. I learn that he was forced into an early retirement and was living on a small pension. His wife of thirty-some-odd-years recently divorced him. One of his daughters has AIDS and his son was basically an unemployed bum, living with him (or rather mooching off him) and was recently caught and arrested for forging checks on his personal checking account, depleting the account. With every story he told, things just got worse. My heart went out to him and I was embarrassed to think that I ever let my mind go awry.

He even told me that the last time he locked himself out of his car he called a locksmith and it cost him \$40 to get in. How ironic, but I just listened. I did not share with him the last time I locked myself out of my car!

As we returned to his car he sank his hand deep into his pocket and withdrew a crumpled \$10 bill. It was his modest offering of appreciation, which I politely declined. I told him that if I was ever stranded on the side of the road, maybe he'd be there to return the favor. He turned toward me and said, "I'll be looking for you the rest of my life." It was now my knees that were buckling.

People may not remember your name, who you are or what you said, but they will always remember exactly what you did for them and how you made them feel. That is everlasting. **TNL**





February 2001

# Letters

The National Locksmith is interested in your view. We do reserve the right to edit for clarity and length.

## Lost in a Fire

I am writing to ask if there are any locksmith companies out there that have extra locksmith equipment that they may want to sell for a reasonable price. The reason I am asking you this is because a few months back my business and home caught fire and I lost all of my locksmith equipment. I was able to replace some of my equipment but I still need some parts to get back up and running. If there is anyone out there that can help please write or call: Earl Stedje, Earl's Locksmithing, 3255 Wells Road #7, Oakley, CA 94561, Phone (925) 684-9301. Thank you.

*Earl Stedje  
California*

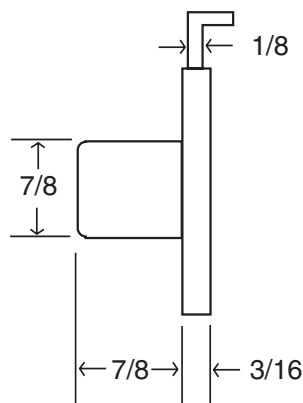
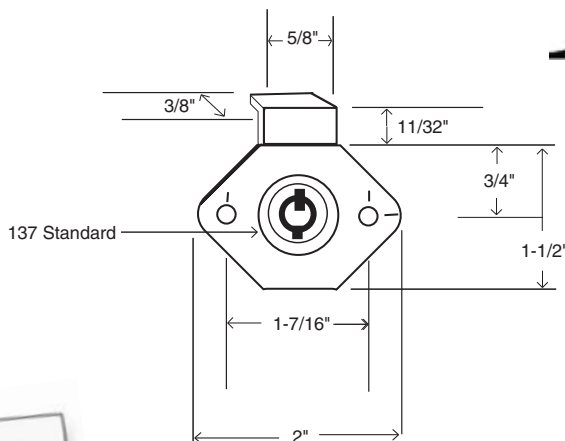
## Can't Find It

I'm stumped, so I'm asking everyone out there. Have you seen this lock?

The National Locksmith  
1533 Burgundy Parkway  
Streamwood, IL 60107  
Attn: Editor

I'm looking for a wholesaler or supplier that stocks this lock. This lock is installed on thousands of Royal truck bodies. The keyway is a 7-pin 137 standard. If anyone has any information please write or fax to the following address: Richard Kolak, OK Locksmith, P.O. Box 340001, Sacramento, CA 95834-0001. Fax: (916) 923-9427

*Richard Kolak  
California*



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## Licensing Cons & Cons

Can anybody name one good thing about the licensing of locksmiths in the state of Illinois? I've seen absolutely nothing change except my blood pressure and the size of my wallet. First of all I had a terrible time getting licensed, even though I have been a locksmith for 25-plus years now. As of today I've spent over \$1500 on IL licensing but I've seen absolutely nothing positive from it.

I was just reading my Ace Hardware flyer and they advertise for in store lock servicing, they re-tag master key locks, you name it, but they don't have to pay for licensing or have any one fill out forms or anything. The Police even open cars! Shouldn't they have to fill out the forms as we locksmiths do?

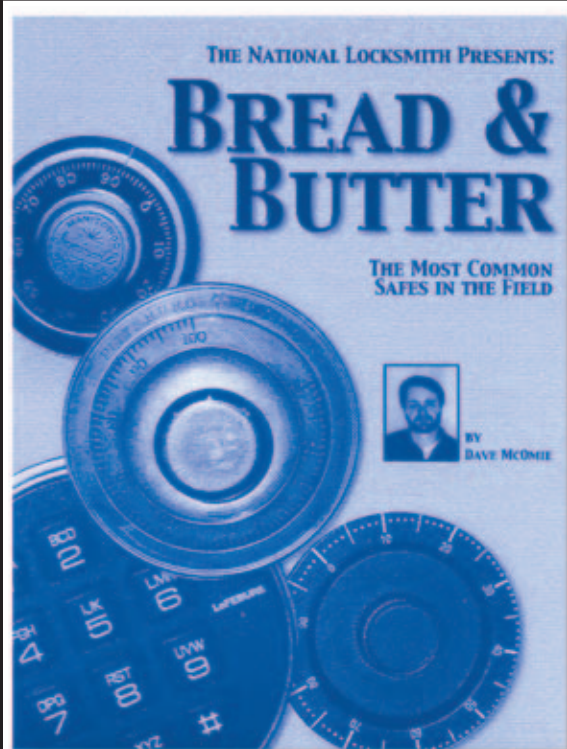
I have also noticed that roadside services use primarily non locksmith licensed tow truck drivers to open cars. After some of my customers have waited at their cars for over 4 - 5 hours and had two or three fly by night outfits try to unlock their cars

and failed, then they call me as a last resort. These customers inform me that they were very unhappy about

the roadside service. I don't really blame them, I would be mad too.

TNL

Pat Wall  
Illinois



# Bread & Butter

Now here is one amazing value!

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#BB - 01



# Security Café

**DROP IN FOR  
TOOLS, TECHNOLOGY  
& EQUIPMENT**



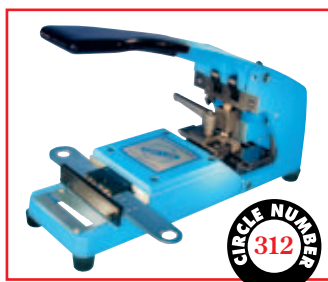
## Adams Rite Fire Rated Exit Device

Adams Rite Manufacturing Company recently revolutionized the door industry with its introduction of the 3900 Series fire-rated exit device for wood doors. The 101 year-old manufacturing company was one of the first ones on the market to make the top rod only design. It simplifies preparation as well as reduces maintenance. This innovative design not only makes it aesthetically pleasing, but also meets all requirements for a fire-rated exit device. The 3900 Series has a full fire-rated Warnock Hersey listing for up to 90-minutes with 8' x 8' pairs and 4' x 8' single doors.

The clean, simple design combines great looks with solid security. Its smooth, quiet operation fully meets ADA guidelines. The strong, durable construction of the device incorporates a patented top latching mechanism which interlocks the door to the frame - making it less susceptible to damage and vandalism. Unlike similar products on the market, the 3900 requires no metal channel in the door.

## BP201 Blue Punch Key Machine by PRO-LOK

The Blue Punch Key Machine is a dedicated key punch machine designed to



provide factory original keys. Creates keys with the speed of a duplicator. The Blue Punch is fast, extremely accurate and easy to use. The key machine is set up at the factory to provide automatic spacing and depth. An ideal key machine for the commercial locksmith, hotels, schools and other institutions. Fast and easy to use, this key machine is precision machined to the tightest tolerances. Portable and dependable, hand-operated, no electrical outlet needed. The fastest and easiest punch machine on the market. Available for most popular keys.



## LCN Closers Save Time and Money

Depending on the size of your next job, LCN can save you valuable minutes or even hours. With our 1370, 1460 and 4040 series door closers, you won't waste time thinking about the installation. You'll just do it. LCN promises the fastest, easiest installation in the industry because they have developed unique mounting brackets for their closers (available on the 1370 and 1460 series). That means no more guesswork. Their easy-to-follow mounting instructions will lead you step-by-step through the installation process. In addition, their no-measure mounting template assures an accurate installation every time. After all, time is money. Especially when the time saved is yours.

## Weather Resistant Locks from Illinois Lock Company

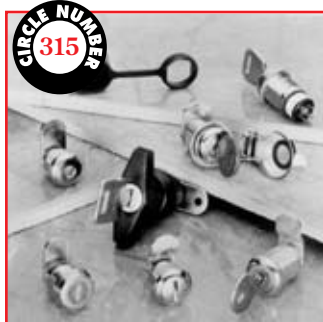
Illinois Lock Company is proud to announce their new UL/NEMA tested weather resistant series of locks.



## Keysure Lockbox Born To Be Broken

A simple plastic keyless lockbox encapsulates important keys. Functions like a security seal. To access a key, the container must be physically broken. Signatures prevent the transfer of contents and surreptitious use of key.

Keysure can also be surface mounted. The Keysure System is available to house hundreds of Keysure containers. It's an ideal key control system for the multiple dwelling market to solve the problem of "how to leave a key with a landlord" or any other third party and have "physical accountability" for individual keys.



Designed for NEMA 4 applications, these locks withstand harsh environments with stainless steel keyway/dust shutters, bezels, triple layered plating and internal 'O' rings, and are manufactured to operate after 500 hours of salt spray testing.

Various brass tumbler mechanisms are available, including the famous DUO tumbler mechanism. Offered in Cam Lock and Knob Lock keyed and keyless styles. A number of weather resistant switch locks with optional potted wiring harnesses are also offered. All of the above described locks are available in both standard and weather resistant designs.



## ESP Blanks



ESP Lock Products has six new key blanks in its assortment. They are Honda HD103 (Ilco X214), General Motors B89 and B92 (Ilco P1107 and P1109), Chrysler Y159 (Ilco P1975) and Master M19 and M20 (Ilco 1092-900 and 1092-6000).

## Vehicle Gun Locks from Tufloc

Tufloc's vehicle weapons racks feature an electrical-mechanical lock head with an independent key backup. The dual-release lock, which holds the weapon in place, can be accessed with a key

Continued from page 14

SECURITY CAFE



or by using the electric 8-second delay timer. The lock head comes with or without the rack assembly and is keyed alike or differently. Master keying and handcuff keys cylinders are also available.

### Visionic Introduces VXS-5 Proximity Access Control System

Visionic Inc., is pleased to introduce the VXS-5. It is the ideal proximity access control system for small offices and residences with a limited number of users. It answers the need of many users for a system that has a memory



capacity of 10 keys or less. Both installers and end-users will appreciate VXS-5's simplicity. It consists solely of a wall-mounted reader/controller in a single unit and encoded tags or cards. There's need for a separate controller unit. No need for a PC or programmer.

### Slide Lock Online Automotive Training

Slide Lock Tool Company has free online training courses. The five-part

seminar, which can be seen at [www.ztool.com](http://www.ztool.com), can be used to train staff with the five most needed to know subjects, including "Introduction to the Basics", "It's all in the Manual", "The Business Side of Auto Lockouts", "Let's Open the Car" and "Avoid the Pitfalls".

### Steck Big Easy "GLO" Lockout Tool Kit



The new, improved BigEasy "GLO" has a very bright florescent yellow paint that actually glows in the dark making it easily visible to the technician, even in poor light. The BigEasy "GLO" works

just like the original BigEasy, reaching into the vehicle from the wedged upper rear corner of the door to actuate the interior buttons, slides or handles. All danger of disconnected linkage and damaged wiring inside the door is eliminated. The BigEasy "GLO" Kit also includes the SureGrip Knob Lifter for those vertical lock buttons.

### Jensen Tools Now Carrying Panasonic 3.6V Cordless Screwdriver Kit



This powerful, compact screwdriver features 39 in. lbs. torque and 22-stage clutch offering torque



## How To Pick Tubular Locks

This software shows you every step of tubular lock picking in clear and simple detail.




CLICK HERE TO LEARN MORE





## #MK - 1

The publication also includes a complete key blank cross-reference covering all automotive key blanks. Locksmiths will be able to better identify and duplicate keys for both old and new security systems. Security keys that cannot be duplicated are noted to direct customers back to their dealers. 



COVER  
STORY!

# The Ilco Ultracode

A new computerized code/key machine offering some interesting features



by  
Giles Kalvelage



## 1. The Ultracode computerized code/key machine.

I was finished with the set. This feature is useful if a large number of keys need to be cut. You won't have to re-count your stack each time someone interrupts your concentration throughout the day to day activities of running a business.

The Ultracode is a heavyweight machine. It weighs in at just under 76 lbs., and has a footprint of 1' 2" W X 1' 7" D X 1' 4" H. Additionally, the manufacturer recommends almost twelve inches of clearance between each side and the rear of the machine for the proper ventilation of the computer.

These dimensions are important when setting up a workstation for this piece of equipment. Size and strength of the counter or table really need consideration.

Removing the machine safely from the box definitely requires two people. Destroying the box is not recommended, because the packaging is uniquely designed for the product should it ever need to be transported. Moving the machine from place to place should also be carried out by two people and never lift the machine by the keyboard! You'll make a one-piece machine into a two-piece. There are instructions included in the box for unpacking the machine. Resist the temptation of delving right in to see your new machine and read through the instructions, which will be found immediately upon opening the box.

## Getting the Ultracode Ready to Use

Once the machine has found its home and is plugged in, it will need to be calibrated as any other key machine. Ilco

## Introduction

Ilco Unican has a new computerized code/key machine, which I had the pleasure to try out for awhile. (See *Photograph 1.*) Reducing the number of miscut keys by dialing the wrong code could be a thing of the past, just as typing errors have been largely eliminated with the introduction of the computerized word processor. The Ultracode allows the user to read the code on its display verifying its correctness, before commanding the machine to cut the key blank. During the trial, I was cutting single sided commercial keys in about 15 to 20 seconds. Cutting additional keys of the same code is a breeze. All I had to do was insert another key blank, press "Enter" and "Start." If I wanted, I could program the number of alike keys to be cut and the machine's display would count keys and tell me when



Unican recommends routine calibrating every three months. Unlike most machines, calibrating the Ultracode is almost fun. It's harder to read about the procedure than it is to actually do it.

You will need to calibrate all four sides of the jaw and the cutter. In the past, I've not had the best luck with multi-sided jaws or vises. I've always had one side produce more accurate keys than the other. Manufacturing 4-sided jaws is no picnic either! It's tough to manufacture a jaw with enough "play" to allow the jaws to clamp a key blank securely, release a cut key without binding, allow the jaw to rotate and maintain the tight tolerances to insure .001" or less accuracy in key cutting. Ilco did a fine job with this one. All of the inherent minute inaccuracies encountered while trying to manufacture a four-sided jaw has been overcome with the computer calibration technique. When using the templates supplied (Z1 - looks like a cutter without teeth, and Z3 - looks like a machined key blank) complete calibration takes a few minutes.

To calibrate the machine, it must be turned on. I'm not trying rewrite the Owners Manual here, so basically, once the machine loads its program, the display will provide you with a list of options. Scrolling down to the "Calibrate" option and pressing "Enter", the display will prompt you through the procedure. First, the cutter is replaced with the Z1 template. The Z3 template is placed in Side A of the jaw and the machine, via low voltage electrical contact, comes up with the X & Y coordinates. Simply, this just means depth and space starting points. Each step will require the operator to acknowledge the computer's request by pressing the enter key, but that's easy. After side A is calibrated, the machine will prompt the same instructions for sides B, C, and D of the jaws. Once all of that is accomplished, you will be prompted to remove the Z1 template and replace it with the cutter. You will be prompted to calibrate the cutter. It will start spinning and touch the Z3 template a few times. Because the Z3 template has been nicked, it is recommended to dispose of it. But your machine is now calibrated.

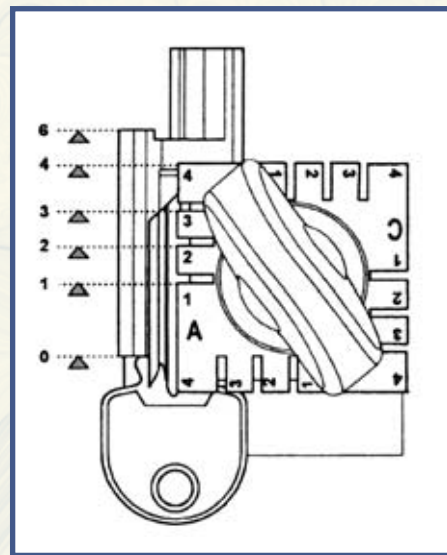
### **Codes and Code Cards**

Now it's time to get to work. The machine frequently refers to code cards. Don't take the word "card" too literally. These cards are really data files locked away in the computers memory. There is, however, a card list booklet which lists the Ilco cards by manufacturer, cross referenced to HPC 1200CMB code cards, and by key code. When requesting the machine to cut by card, it will request you select either an Ilco or an HPC code card. (Eventually, there will be a feature available for users to program their own user cards.) For instance, an Ilco 410 card is equivalent to an HPC C45, Schlage large pin. Selecting either will tell the computer to cut Schlage keys. It will next ask you for the cuts. Once they are entered, the display may request you to use a certain side of the jaw or display an asterisk after the word "Jaw" (JAW100/A, JAW100/B, or JAW100/\*). If an asterisk appears, that means that the computer will find out where the top edge of the key blank is, regardless of which jaw is used, by electrical current. This will ensure an accurately cut key even when cutting double-sided keys, using different sides of the jaw for different sides of the key blank. This could be important when cutting the second side of a key with a lot of deep cuts in the code. How many machines recommend cutting both sides of the key by code? On the other side, because the key blank height is found by

electrical contact, you cannot cut aluminum anodized or plastic keys with this machine. If the display requests that you use side A or B, it must be respected or your key will be approximately .040" shallow or deep.

**M**any of the automotive codes have already been installed in the machine. For instance, requesting the machine to cut by code, inserting the code "10105", will prompt you with a list of manufacturers. If you want to cut keys for a Mazda, simply select Mazda. The Ultracode comes back with cuts automatically inserted on the display of 4341252125. It does not give any key blank information, and not all codes are available, so don't throw away your code books yet. Ilco Unican's goal is to have all North American auto codes installed directly into the machine via future updates. If key cuts are not available, but the code series is, selecting the series will load the space and depth information and request that you insert the cuts. Once this is inserted, the prompt will tell you to use JAW100/\*. Remember, this asterisk means that the key blank will be found by electric contact, thus the key blank can be inserted into any side of the jaws the user finds that the blank fits and holds well.

(In these examples, all of the keys described were shoulder stop keys. After the word "JAW100/A", "JAW100/B", or "JAW100/\*", you will see the word "Pos.: 0". If the code desired to be cut uses a tip stop gauged key, the "0" would be replaced with another number value, indicating the use of a tip stop gauge to be inserted into a slot in the jaws identified by that number. (*See illustration A.*)



**A. A drawing of the four-sided jaws. Note the positions for gauging keys. The screen will advise you which position to use. Position "0" is for shoulder gauged keys, one through six for tip gauge keys.**

### **Code Keys of a Different Shape**

One of the neatest features of this machine is the ability to modify the types of cut on standard keys. Remember, as far as a lock is concerned, it doesn't care what a key looks like, it just wants the tumblers to align with the shear line before the lock will turn.

Slopes on standard keys have one, maybe two purposes.

1. Key retention. A key cut with a "bad" code of 13579 would pull right out of the lock when the key is turned if there were not full slopes between cuts.

2. When using "good" combinations, the longer slope actually promotes wear of the tumblers because they have longer to travel over the edge of the key as it is inserted and



removed from the lock. By not allowing the machine to cut a slope any higher than the depth next to it allows the key to be inserted and removed easier, providing less wear on the lock, but it does reduce key retention. Ilco identifies this as a flat cut. On manual code machines, this can be simulated by “dragging” the cutter from one space to another at the higher depth level.

We’ve all heard of Maximum Adjacent Cut Specification, or MACS. When cutting a key, it is recommended that we only cut a certain depth cuts next to each other, otherwise the angle of the cutter can cut off a major portion of a shallower depth, leaving no flat on the key for the tumbler to rest. Many lock manufacturers have MACS values of 6 or 7 in the case of 10-depth pin tumbler locks.

Automotive locks oftentimes have a value of 3. Are these magic numbers dictated by the lock manufacturers? Not directly. Two factors actually influence MACS, Spacing and slope angle. Widen the distance between tumbler chambers on the lock, MACS goes up. Reduce the slope angle your key machine cuts keys at and your MACS goes up. Only the manufacturer can increase the dimension between chambers, key machine manufacturers can modify slope angle their machines can cut at. Usually this is accomplished by changing cutter wheels. It’s common to see cutter wheels at 87-degrees, 90-degrees and 100-degrees. The less slope on the key cuts, the harder the key will be to insert and remove from the lock, but your MACS will increase.

The Ultracode can change the slope angle from cut to cut depending on the depth of each adjacent cut. It makes for a weirdly shaped key, but what would be otherwise an unusable combination, might now be available. The automotive industry has been using these “Ideal” cuts for a few years to help reduce lock wear on their wafer tumblers. Some refer to this type of cut as a Laser cut. (See Photograph 2.)

With special adapters and cutters, special vertical cuts can also be made with this machine.

### **Cutting by Personal Computer**

The Ultracode can also cut keys for a master key system set up on a personal computer and transmitted to the key machine via a serial bus. Currently, only one version of master key program will operate on the Ultracode, however, according to Stephen Fish of Ilco Unican, there are future



**2. The cuts on both sides of this key are the same code. On the left, the combination is cut using the Laser (or Ideal) style feature, the right shows standard cuts.**

plans to upgrade the machine to be able to use anyone’s master key software.

### **Other Bells and Whistles**

An available option for the Ultracode, which was not included with this test machine, is an optical reader. (See photograph 3.) Instructions for use were included in the main Ultracode Operators Manual, so I glean my information from that, making the assumption that the optical reader works as well as the rest of the machine does.

According to the manual, the optical reader can decode keys. For this function, it is necessary to connect the Ultracode to a personal computer.

The optical reader will also allow the machine to duplicate keys. Once the key has been read, the operator can cut a new key using the machine’s collected data, or the data can be gently modified to compensate for wear.

The Ultracode comes with a HSS cutter wheel. While this is a great standard cutter, a carbide cutter is also available as an option. If the carbide cutter is installed, the user will have to mechanically adjust the pulley configuration of the motor to acquire the proper cutter RPM’s. The Operators Manual gives a complete step by step outline on how to do this.

The Ultracode comes with all the tools you need to adjust, maintain, and change cutters on the machine and to cut all types of paracentric keys. Repairs are expected to be low, but if there are problems, the Operators Manual offers complete instructions on the repair of all user repairable items.

### **Personal Comments and Observations**

When getting a new machine, computer program, or specialty tool, it often requires a user break-in period. This is the time it takes for the user to become comfortable with the features and engineering of the product. In a new car it could be something like getting used to having the windshield wiper switch moved from the dash on your old car to the turn indicator lever on your new car.

**Continued on page 24**

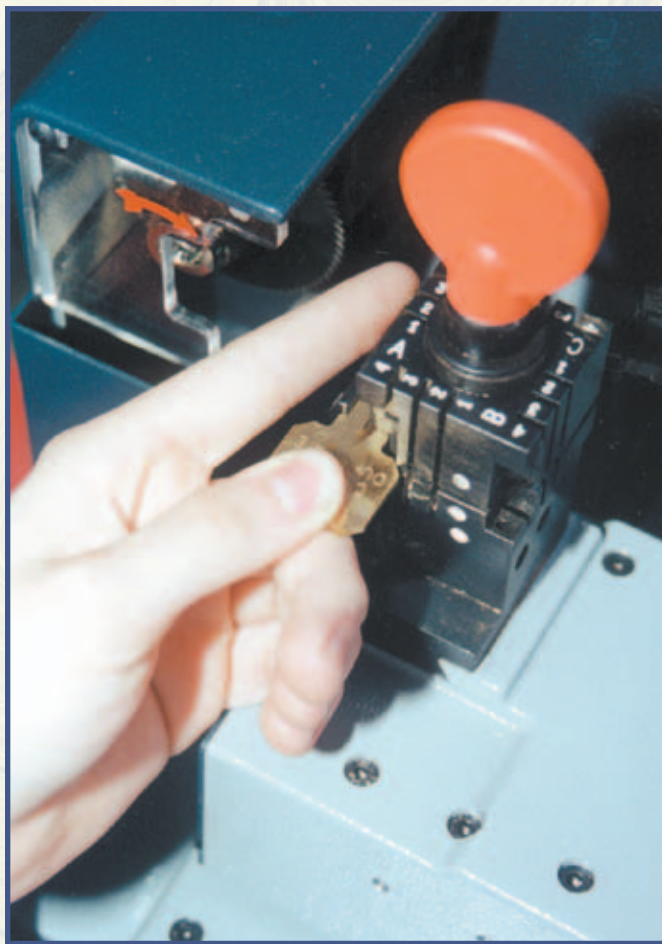


**3. An available option for the Ultracode is an optical reader.**



Continued from page 22

**4. Inserting the key blank is easily accomplished with one hand. When the carriage is in the loading position, the cutter wheel automatically turns off, an added safety feature which will only allow keys to be cut instead of your fingers.**



When it rains, it takes just a bit longer to find the wipers because you look on the dash first. The Ultracode is the same way. The jaw and cutter is mounted sideways, which is no problem, but it took me awhile to get used to the change. Once I did, I found that I could load the key blank into the vise with my left hand, properly seating the blank with my index finger, and clap the jaws with my right hand. After about a dozen blanks, I liked this configuration better. (See Photograph 4.)

The alpha numeric keyboard is not set up like a standard computer/typewriter keyboard. Obviously, this makes for a hunt and peck style of data entry. Fortunately, there is not much typing to be done with code entry. My first reaction was an irritated, "Who designed this?" There are only 17 keys for all ten numbers and twenty-six letters! A shift key allows the 17 keys to be used twice. Some keys shared letters and numbers, some shared letters, and none had the pattern of a typewriter keyboard. But after using the keypad for about a week, I found that most of the codes entered didn't require the use of the shift key. Maybe this happened to be a coincidence.

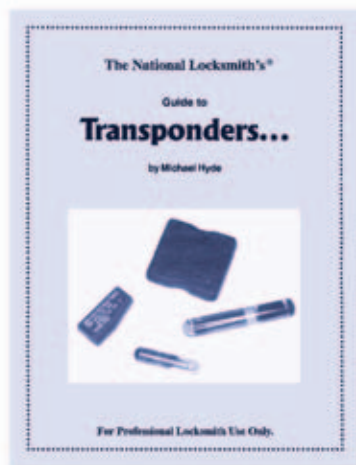
I didn't really get a good chance to test out the PC assisted code work. I don't use the master key program which is currently compatible, but not included, with the Ultracode. I look forward to the promised user upgrades for the machine and feel it will be a great asset for this machine. The documentation which came with the machine was accurate and well organized.

Originally, I did not think this machine would be applicable for mobile locksmith use. However, the Ilco Unican representative said locksmiths have, in fact, successfully used them in their mobile vans. They have taken the leg supports off of their machines and directly mounted them to the workbench to keep the machine as stable as possible. They have also packed the carriage in foam rubber as added protection against movement. While checking calibration more frequently may be desirable, there hasn't been a reported problem with the machine losing its accuracy by going mobile. One situation which needs to be considered on the first generation of machines, however, is temperature. As the temperature falls, especially below freezing, the lubricants in the motors stiffen, causing a lower RPM of the cutter wheel. The machines in production now have a temperature sensor built in which allows the motor to warm up before the carriage will move and feed the key blank into the cutter.

Once I learned the Ultracode, I found the problems to be with the user more than with the machine. This is a great machine. Read the instructions, follow the commands on the Ultracode display, and you'll be cutting keys quickly and accurately.

For further information: on the Ultracode contact Ilco Unican at: 252-446-3321 or circle 282 on Rapid Reply. **TNL**

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#TS - 2001



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# Advancements in Code Cutting

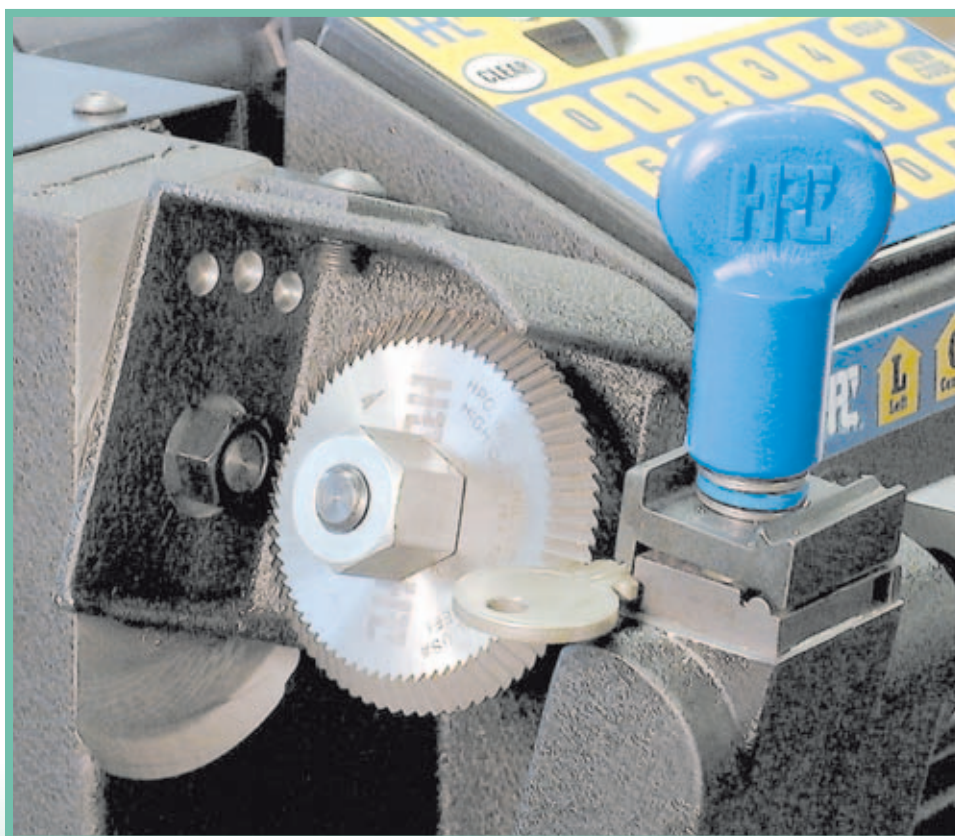
by HPC



Originally locksmiths had to rely on micrometer measurements to create a new key. Then HPC introduced a revolutionary method of code cutting through the use of code cards. This is still the most popular method used today. Further innovations lead to the CodeMax® Machine, the original computerized code cutting machine.

**HPC offers a complete family of key machines, including some of the best code machines in the industry.**

“Standard of the industry” is a term that is often misused. However, if there was ever a standard for code cutting machines in the locksmith industry HPC’s 1200CMB Blitz™ Machine is certainly it. From its introduction in 1976, when it was sold as the 1200CM, it revolutionized cutting keys by code. By now more





than 30,000 of these machines have been sold around the world. The 1200CMB Blitz™ machine can cut virtually all standard pin and disc tumbler keys, as well as many specialty keys.

The 1200CMB Blitz™ machine is simple to use and very versatile. In less than 30 seconds you can change from cutting a Ford 8-cut key to cutting a Medeco BIAxIAL® key.

To use the machine, simply insert the appropriate code card. Use the “space” dial to move the carriage to first space. Then move the “depth” dial to the proper depth for your first cut. Continue this procedure until all the cuts are complete.

### **The 1200CMB Blitz™ machine is generally considered a “must-have” for any locksmith creating master key systems or doing code work.**

HPC's Punch Machine™ operates on the same principle as the 1200CMB Blitz™ machine. However, instead of an electric motor turning a cutting wheel, The Punch Machine™ machine uses a manually-operated lever to “punch” keys by code. This means no electricity is needed, so you can bring your code machine to the job site. The Punch Machine™ comes with 101 cards and 3 punches, so it is ready to punch the most popular keys right out of the box.

Based on the 1200CMB Blitz™, the HPC CodeMax® is a complete code cutting system. This computerized key machine functions as a fully automatic stand-alone unit with an internal computer chip that contains Depth & Space Data (DSD) for more than 800 different lock types. This machine can accommodate keys with up to 14 spaces and 14 depths; it also has a micrometer function in both inch and metric formats. This allows it to cut virtually all standard vehicle, commercial, residential, and furniture keys throughout the world. The total power of the CodeMax® is realized when you connect it to your PC. Download codes from CodeSource™, download master key systems from MasterKing™ and make keys for any cylinder listed in KeyTrail™ with the click of a button. Make high security angle cuts (such as Medeco®) manually or use the Automatic Angler model (CodeMax®AA), and let the cutter head pivot automatically. Either way you'll find creating keys on a CodeMax® quick, easy and trouble free.

All HPC 1200 Series Code Machines come with a free copy of the Interactive Depth and Spacing Guide software and with a copy of HPC's CodeSource™ (over \$700.00 in value). CodeSource™ is the most comprehensive, user-friendly code retrieval program on the market today. Find the bitting you are looking for by quickly accessing the CodeSource™ database of over 2.5 million codes. Search by code number, 1200CMB Blitz™ and The Punch Machine™ code card numbers, manufacturer name, and/or key blank number. Or have CodeSource™ work in reverse. By entering any bitting or partial bitting CodeSource™ will then display the code numbers and bittings that match the information you requested. Download this information to your CodeMax® or dial it in to your 1200CMB Blitz™ or The Punch Machine™ and create a new original key.

Whether you are looking for a code machine to take to the job site, to keep in your vehicle, or to keep in your shop, HPC has the right machine for you. From the portable Punch Machine™, to the must-have 1200CMB Blitz™ Machine, to the CodeMax®, the original computerized code machine, HPC offers a family of machines for every budget and every need.



### **CodeMax® AA**

Key Machine Model Number.....#1200MAXAA  
 Motor.....120VAC (1/6 hp, 4 amps)  
 Weight.....49 lbs/23kg  
 Machine Size (Inches).....12"W x 14"D x 14"H  
 Machine Size (Metric).....30.5 x 35.5 x 35.5cm  
 Bench Size (Inches).....20"W x 14"D  
 Bench Size (Metric).....51 x 35.5cm  
 Additional Models Available:  
 Key Machine Model Number.....#1200MAX  
 Motor.....120VAC (1/6 hp, 4 amps)  
 Weight.....42 lbs/19kg  
 Key Machine Model Number.....#1200MAX240V  
 Motor.....220/240VAC 50 cycle  
 Weight.....42 lbs/19kg  
 Key Machine Model Number.....#1200MAXAA240V  
 Motor.....220/240VAC 50 cycle  
 Weight.....49 lbs/23kg

### **Cutters Supplied:**

- 1) Tool Steel, 100° large cylinder.....#CW-14MC
- 2) Tool Steel, 90° small cylinder.....#CW-1011
- 3) Tool Steel, 90° large cylinder.....#CW-90MC
- 4) Tool Steel, 76° Sargent.....#CW-20FM
- 5) Tool Steel, 87° some automotive.....#CW-47MC

### **Accessories Included:**

- 1) CodeSource.....#CS-CD
- 2) Cable (for use with software).....#CABLE-25S
- 3) Horseshoe Tip Stop.....#CM-1054R
- 4) Red Tip Stop.....#CM-1054MA
- 5) Cutter/Adjustment Wrench.....#WRENCH-1
- 6) Space Adjustment Wrench.....#WRENCH-2
- 7) Cutter Nut Wrench.....#WRENCH-3
- 8) Interactive Depth & Spacing Guide....#HDSB-CD
- 9) Manual

### **Optional Accessories Available:**

- 1) Additional Software.....(KeyChoice) KC-35  
 (KeyTrail) KT-CD  
 (MasterKing) MK-35
- 2) Medeco® Jaw.....#MJ-1
- 3) Schlage Primus®/Quad Jaw.....#SPJ-1



- 4) Key Decoder.....#HKD-75
- 5) Tip Stops for  
Safe Deposit Box Keys.....#HT-SD & #RT-SD
- 6) Tip Stops for L&F  
Safe Deposit Box Keys.....#HT-125 & #HT-625
- 7) Spacer for  
Safe Deposit Box Keys.....#SPR-5
- 8) Brass Plated Key Shim.....#KBPS-1

#### Optional Cutters Available:

- 1) Tool Steel, 86° Medeco®.....#CW-1012
- 2) Tool Steel, 90° Emhart.....#CW-1013
- 3) Tool Steel, 90° Assa.....#CW-32MC
- 4) Tool Steel, 100° Kwikset.....#CW-1014
- 5) Tool Steel, 105° Double Angle.....#CW-105
- 6) Tool Steel, .045 Side Mill Slotter..#CW-45SMS
- 7) Carbide, .054 Yale Slotter.....#CW-BC
- 8) Carbide, .058 Lloyd Matheson Slotter...#CW-CC
- 9) Carbide, .064 S&G Slotter.....#CW-DC
- 10) Carbide, .069 Diebold Slotter.....#CW-EC
- 11) Carbide, .088 Mosler Slotter.....#CW-FC

#### **1200CMB Blitz™**

Key Machine Model Number.....#1200CMB  
 Motor.....120VAC (1/6 hp, 3.5 amps)  
 Weight.....33 lbs/14.8kg  
 Machine Size (Inches).....12"W x 14"D x 9"H  
 Machine Size (Metric).....30.5 x 35.5 x 23cm  
 Bench Size (Inches).....20"W x 14"D  
 Bench Size (Metric).....51 x 35.5cm

#### Additional Models Available:

Key Machine Model Number.....#1200CMBDC  
 Motor.....12VDC  
 Weight.....33 lbs/14.8kg  
 Key Machine Model Number.....#1200CMB240V  
 Motor.....240VAC 50 cycle  
 Weight.....33 lbs/14.8kg  
 Key Machine Model Number.....#1200CMBACDC  
 Motor.....240VAC/12VDC (1/6 hp, 12 amps)  
 Weight.....43 lbs/19.5kg  
 Machine Size (Inches).....12"W x 14"D x 11"H  
 Machine Size (Metric).....30.5 x 35.5 x 28cm

#### Cutters Supplied:

- 1) Tool Steel, 100° large cylinder.....#CW-14MC
- 2) Tool Steel, 90° small cylinder.....#CW-1011

#### Accessories Included:

- 1) Code Cards  
112 code cards/8 micrometer cards....#DECK-120
- 2) Binder (for 120 cards) with Manual.....#CARD-B
- 3) Horseshoe Tip Stop.....#CM-1054R
- 4) Red Tip Stop.....#CM1054MA
- 5) Brass Plated Key Shim.....#KBPS-1
- 6) Cutter/Adjustment Wrench.....#WRENCH-1
- 7) Space Adjustment Wrench.....#WRENCH-2
- 8) Cutter Nut Wrench.....#WRENCH-3
- 9) Software.....#CS-CD & #HDSB-CD

#### Optional Accessories Available:

- 1) New Code Cards.....Assorted



- 2) Medeco® Jaw.....#MJ-1
- 3) Schlage Primus®/Quad Jaw.....#SPJ-1
- 4) Card Panels (40's).....#CARD-BP
- 5) Soft Carrying Case.....#1200 CASE
- 6) Tip Stops for  
Safe Deposit Box Keys.....#HT-SD & #RT-SD
- 7) Tip Stops for L&F  
Safe Deposit Box Keys.....#HT-125 & #HT-625
- 8) Spacer for  
Safe Deposit Box Keys.....#SPR-5
- 9) Code Machine Work Center.....#CWC-1
- 10) Key Decoder.....#HKD-75
- 11) Calibration Kit.....#CMB-CK
- 12) Little Mac Card Making Unit.....#MAC-CM
- 13) Chicago BarLoc Adapter Kit.....#CMB-KFD

#### Optional Cutters Available:

- 1) Tool Steel, 86° Medeco®.....#CW-1012
  - 2) Tool Steel, 90° Emhart.....#CW-1013
  - 3) Tool Steel, 90° large cylinder.....#CW-90MC
  - 4) Tool Steel, 76° Sargent.....#CW-20FM
  - 5) Tool Steel, 90° Assa.....#CW-32MC
  - 6) Tool Steel, 87° some automotive.....#CW-47MC
  - 7) Tool Steel, 100° Kwikset.....#CW-1014
  - 8) Tool Steel, 105° Double Angle.....#CW-105
  - 9) Tool Steel, .045 Side Mill Slotter...#CW-45SMS
  - 10) Carbide, .054 Yale Slotter.....#CW-BC
  - 11) Carbide, .058 Lloyd Matheson Slotter...#CW-CC
  - 12) Carbide, .064 S&G Slotter.....#CW-DC
  - 13) Carbide, .069 Diebold Slotter.....#CW-EC
  - 14) Carbide, .088 Mosler Slotter.....#CW-FC
- Patent Numbers: . . . 4,117,763 . . . 4,090,303 . . . 4,012,991

### The Punch Machine™

Key Machine Model Number.....#1200PCH  
 Weight.....16 lbs/7.5kg  
 Machine Size (inches).....9"W x 12"D x 6.25"H  
 Machine Size (metric).....23 x 30.5 x 16cm  
 Bench Size (inches).....9"W x 12"D  
 Bench Size (metric).....23 x 30.5cm  
 Punches Supplied:

- 1) Small cylinder.....#PCH-1011
- 2) Kwikset/Weslock.....#PCH-1014
- 3) Standard large cylinder.....#PCH-14

#### Accessories Included:

- 1) Code Cards.....#PDECK-101  
(97 code cards/4 micrometer cards)
- 2) CodeSource.....#CS-CD
- 3) Interactive Depth & Spacing Guide.....#HDSB-CD
- 4) Allen Wrench.....#WRENCH-4
- 5) Punch/Die Wrench.....#WRENCH-5
- 6) Depth Adjustment Wrench.....#WRENCH-6
- 7) Manual

#### Additional Model Available:

#1200P (Without cards, punches, or accessories)

Optional Accessories Available:

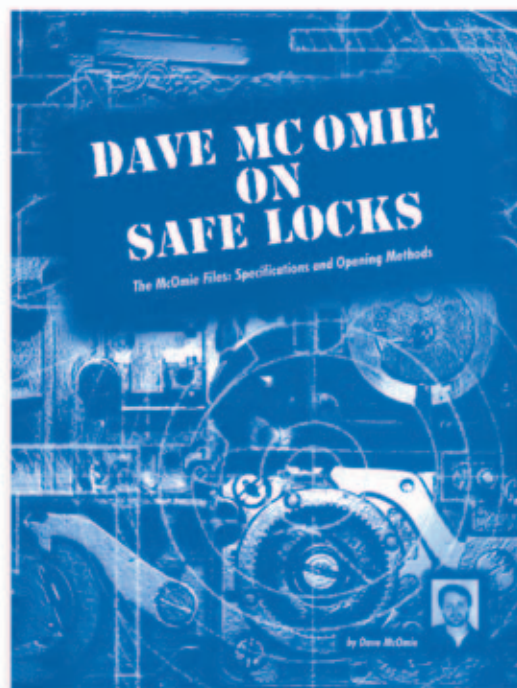
- 1) Hard Plastic Carrying Case.....#PCH-CASE
- 2) Little Mac Card Making Unit.....#MAC-1
- 3) Blank Cards (25 Cards).....#MAK-25
- 4) Key Decoder.....#HKD-75
- 5) Additional Code Cards

#### Optional Punch Available:

- 1) 84° additional foreign automotive.....#PCH-47
- Patent Number: 5,054,350  
 Foreign Patent Pending



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#DMSL - 1



# Ford

## RANGER XLT



by Michael Hyde



The 2000 Ranger is one of the top selling compact pickups in the nation. The truck uses the now standard 8-cut keyway with a P.A.T.S. transponder system on the V-6 engine models.



This truck is equipped with a passenger side airbag, as almost all vehicles are nowadays. In pickups there is usually an On/Off switch for the passenger airbag somewhere in the center of the dash. This truck has one and will work with any 8-cut key and cannot be rekeyed.



The ignition lock cylinder on this truck has an active retainer that can be depressed when the key is in the "ON" position. If no key is available and the lock must be removed to install a new lock, the lock must be drilled. Pry off the plastic ears and drill the sidebar. The sidebar is at the 9 o'clock position, with the top of the keyway being 12-o'clock and the bottom of the keyway being 6 o'clock, as reference points.



As with almost all Ford 8-cut locks, the active retainer can be accessed through the plastic column shroud.



Continued from page 30



A view of the ignition lock being removed from the column.



This truck is equipped with a factory transponder system. The PATS module is mounted under the lock housing. The black plastic induction coil encircles the ignition lock housing.



When working with the ignition lock, be careful not to damage the external plastic buzzer.



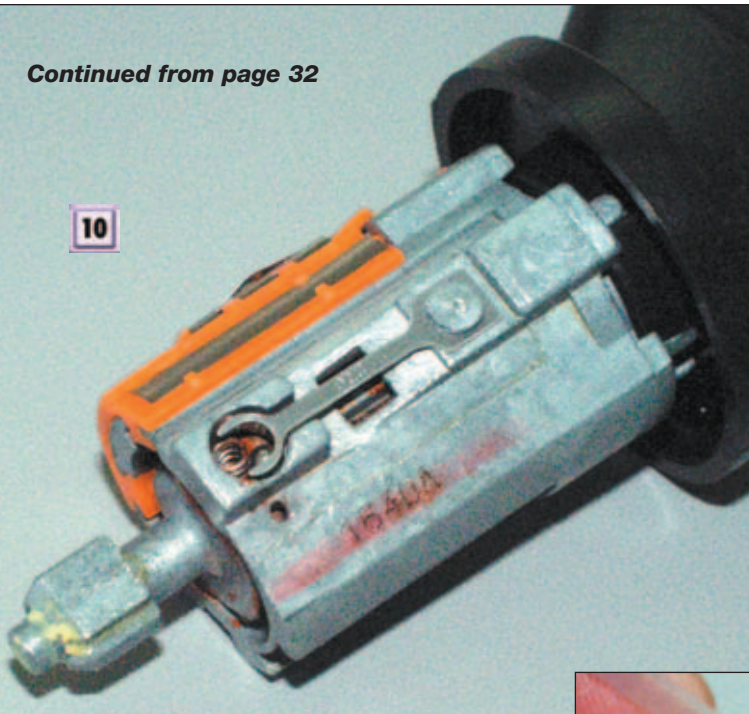
You will need to have a working key to disassemble the lock cylinder. The easiest way to disassemble the lock cylinder is to insert the key into the lock and turn it clockwise until you can depress the ball bearing retainer through the small access



The ball bearing retainer is spring-loaded. When it is depressed and rotated past the stop, the ball bearing will shoot into the cavity the active retainer is housed in and may dislodge it.



Continued from page 32



10



12

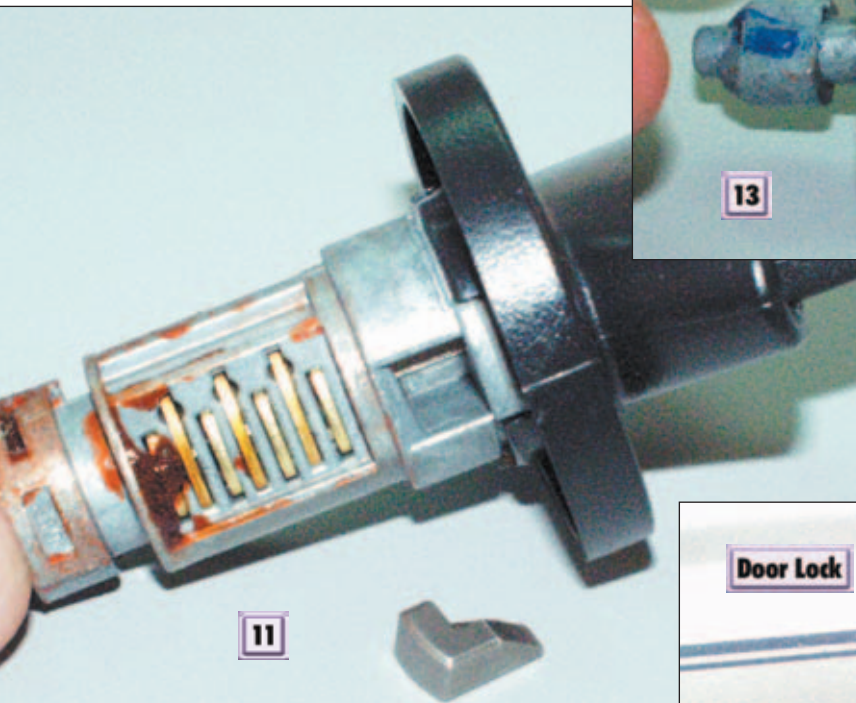
The ignition lock has seven tumblers in positions 2 through 8 and is equipped with a sidebar. Strattec ignition tumblers are part numbers 322251 through 322255.

Pull out the active retainer, ball bearing and spring before sliding the cylinder plug out.



13

Re-installing the ball bearing and spring can be a real pain. The spring is pretty strong for it's size. We suggest using an old-fashioned ballpoint pen. Unscrew the pen and take out the ink pen and use the open end to push down the ball bearing into the plug as you rotate it counter clockwise, it's a great fit.



11

As you remove the cylinder plug take note that the buzzer actuator will most likely fall out of the plug.



Door Lock

14

The door lock on this truck is what I call "cake" or "easy money".



Continued  
from page 34



15

No door panel removal is necessary.



16

The door lock cylinder is held in place by a metal horseshoe clip. The clip extends out the edge of the door.



17

To pull out the metal horseshoe clip without damaging the paint job, stick a thin plastic or wooden wedge between the pliers and the paint. This will also give you more leverage.



18

The lock cylinder can be easily removed from the linkage rod. Stick a pair of vise grips on the linkage rod to keep it from falling back in the door cavity.



19

Once the door lock cylinder is removed from the truck, you can turn it upside down and read the tumblers from the large drain opening on the bottom of the lock.





This door lock has six tumblers in it and no sidebar. The tumblers positions are 1 through 6 from the bow.



To disassemble the lock cylinder you will need a replacement facecap. Remove the facecap and tailpiece and slide the lock cylinder plug out. There is a detent in the lock housing that is spring-loaded, make note of this when you disassemble the lock cylinder.

This is a popular type of Ford lock cylinder. Some Ford models have an electric switch on the end of the cylinder plug. You must mark their positions before disassembly.

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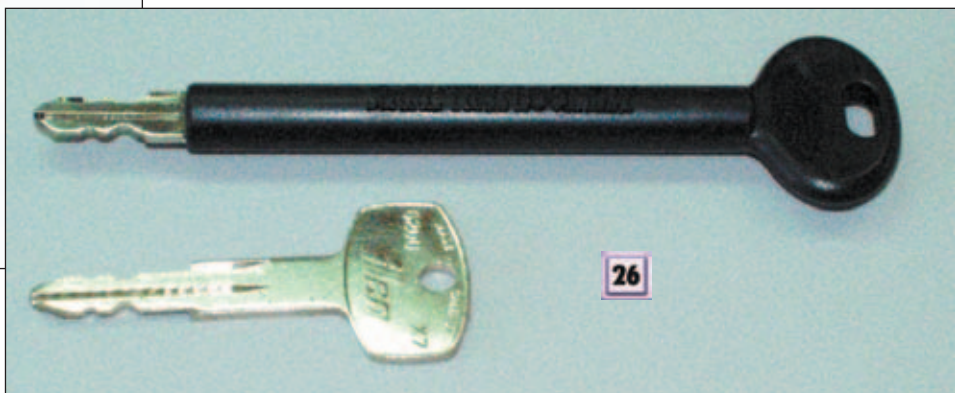
23

It can be very difficult to properly install the aftermarket facecap. The tabs on the facecap are way too short. The cap can become distorted when trying to bend over the tabs. For this reason I suggest getting the Strattec cap tool jig part number 703417. It works very well and gives the lock a professional look.



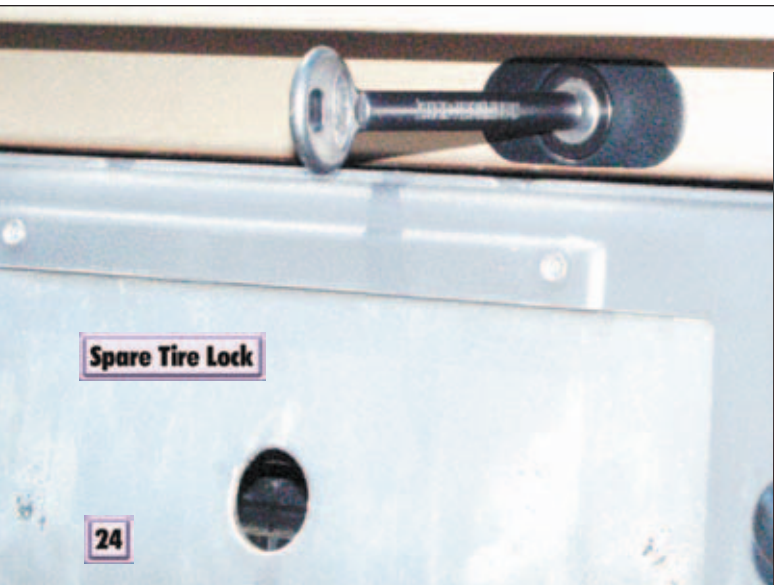
25

The face of the lock cylinder has a code on it. To my knowledge there are only 25 different codes used.



26

The factory spare tire key has a long plastic shaft on it to make it easier to access the lock cylinder. The key is so long it won't fit in most, if not all key machines. I have found it easier to copy the customer's factory key onto an Ilco X7



24

This truck is also equipped with a spare tire lock. The lock cylinder is not a standard Ford keyway. The cylinder is located between the tailgate and the bumper. Insert the key into the lock cylinder turn it counter-clockwise and remove the cylinder. You now have access to insert the tire wrench to undo the tire from underneath.



27

The code series runs from F001 to F025.

**Continued on page 42**



Continued  
from page 40

28

The lock cylinder is sealed shut on the rear. This lock cannot be recoded, it must be replaced.

29

I use a Framon impressing tool and an Ilco X7 blank to impression the locks. Remember the lock turns counter-clockwise to unlock and release.

30

This truck is not equipped with a glove box lock cylinder.

42 • Visit [www.TheNationalLocksmith.com](http://www.TheNationalLocksmith.com)

### Passive Anti-Theft Module Programming

31

There is a red "Theft" light in the instrument cluster on models that are equipped with PATS.

32

A factory diagnostic tool called an NGS (New Generation Star tester) is required for programming new keys into the trucks computer. (Available from National Auto Lock Service, Inc @ 1-800-954-5454)

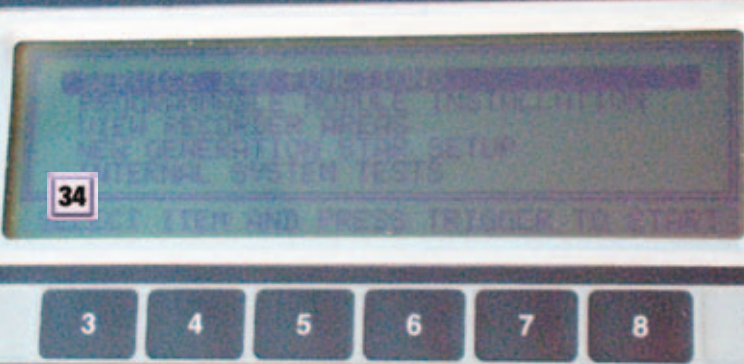
**Continued on page 44**



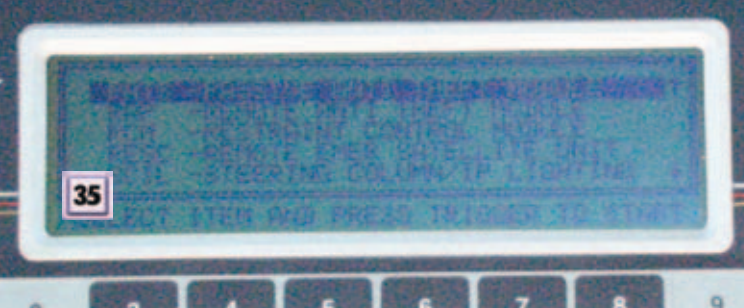
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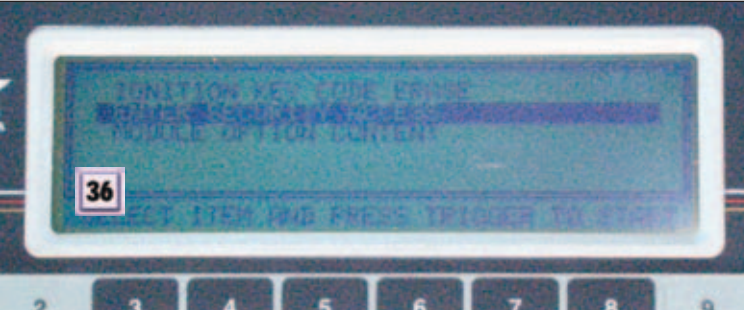
There is a connector to plug the NGS into next to the hood release. This connector is called an OBD2 connector.



Select "Service Bay Functions" on the NGS.

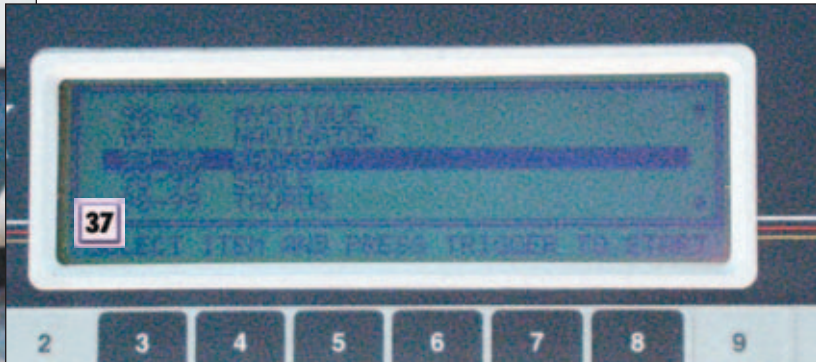


For this truck select "PATS - Passive Anti Theft Module" on the NGS.

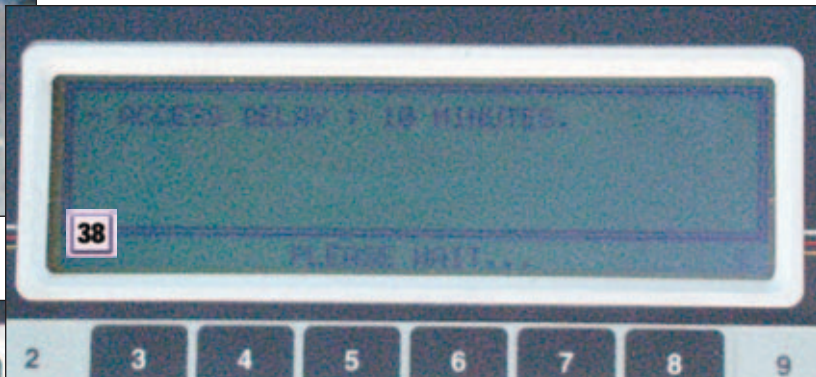


Select "Enter Security Access" on the NGS.

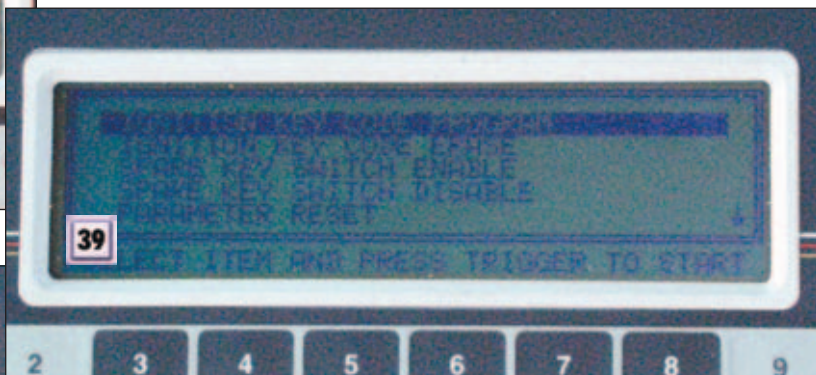
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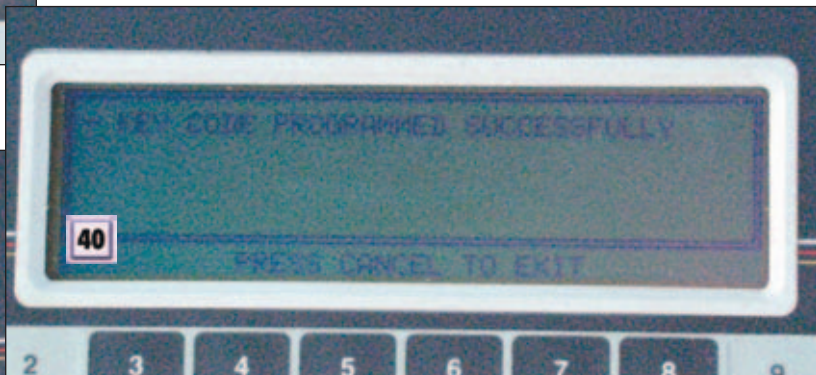
Select "99-00 Ranger" on the NGS.



There will now be a 10-minute wait while the system runs some diagnostic checks. The NGS screen will read "Access Delay :10 Minutes".



After the 10-minute wait a new menu will appear and you will have the choice to add a key or erase all keys. For this truck we added an additional key by selecting "Ignition Key Code Program".



The next screen should appear that would read "Key Code Programmed Successfully" on the NGS. Unplug the NGS and remove the key from the ignition. Wait 2 minutes and then try the newly programmed key.



### AutoSmart Key Specifications

#### 2000 Ford Ranger

**Key Usage:** Ignition/Door

**Spacing:** Standard

**Model Info:** Ford PATS 2 Transponder System - Optional

Bow	Spacing										Tip	Cut-to-Cut
1	2	3	4	5	6	7	8	9	10	11		
0.845	0.753	0.661	0.569	0.477	0.385	0.293	0.201					.092

Code Series: 0001X-1706X

HPC1200CM: CX101

ITL Mfrg: 522

M.A.C.S.: 2

Pak-a-Punch: PAK-F3

Clipper Cam: FORD-5

Carriage: FORD-5

#### Key Blanks

Mfrg	Model Number(s)
Iico EZ	H75 (NON-TRANSPONDER)
Iico EZ	H72-PT (TRANSPONDER)
Curtis	H75 (NON-TRANSPONDER)
Curtis	H72-PT (TRANSPONDER)
JET	H72-PHT (TRANSPONDER)
JET	H75F-NP (NON-TRANSPONDER)
Strattec	597638 (NON-TRANSPONDER)
Strattec	598333 (TRANSPONDER)

**Key Usage:** Ignition/Door

**Spacing:** Framon

**Model Info:** Ford PATS 2 Transponder System - Optional

Bow	Spacing										Tip	Cut-to-Cut
1	2	3	4	5	6	7	8	9	10	11		
0.405	0.497	0.589	0.681	0.773	0.865	0.951	1.050					.092

Code Series: 0001X-1706X

HPC1200CM: CX101

ITL Mfrg: 522

M.A.C.S.: 2

Pak-a-Punch: PAK-F3

Clipper Cam: FORD-5

Carriage: FORD-5

#### Key Blanks

Mfrg	Model Number(s)
Iico EZ	H75 (NON-TRANSPONDER)
Iico EZ	H72-PT (TRANSPONDER)
Curtis	H75 (NON-TRANSPONDER)
Curtis	H72-PT (TRANSPONDER)
JET	H72-PHT (TRANSPONDER)
JET	H75F-NP (NON-TRANSPONDER)
Strattec	597638 (NON-TRANSPONDER)
Strattec	598333 (TRANSPONDER)

**Depths**

1	0.354
2	0.329
3	0.304
4	0.279
5	0.254
6	
7	
8	
9	

**Key Usage:** Spare Tire

**Spacing:** Standard

**Model Info:** Ford PATS 2 Transponder System - Optional

Bow	Spacing										Tip	Cut-to-Cut
1	2	3	4	5	6	7	8	9	10	11		
0.118	0.212	0.306	0.400	0.494								.094

Code Series: F 01-25

HPC1200CM: N/A

ITL Mfrg: N/A

M.A.C.S.: 2

Pak-a-Punch: N/A

Clipper Cam: N/A

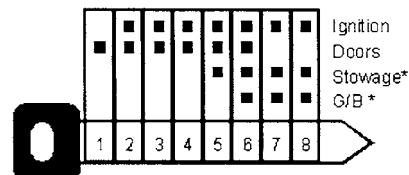
Carriage: N/A

#### Key Blanks

Mfrg	Model Number(s)
Iico	H83F
Iico EZ	H83F

**Depths**

1	0.283
2	0.256
3	0.228
4	
5	
6	
7	
8	
9	



\* If the vehicle is so equipped.

### MAKING FIRST KEY:

#### Method #1

Use the Determinator or EEZ-Reader to decode the door lock for positions 1 through 6. Next, progression the ignition for the two remaining in positions 7 & 8.

#### Method #2

Pop out the door lock cylinder and insert a key blank to "read" the tumblers through the drain opening for positions 1 through 6. Next, progression the ignition for the 2 remaining in positions 7 & 8.

INL



# How To Re-Key Cylinders

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#HT - RKC1



# Quick Entry

## UPDATE

by  
Steve  
Young



### LEXUS RX-300

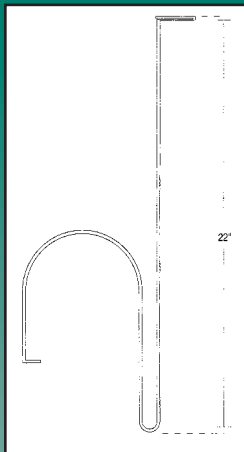
In 1997, Lexus introduced its first "Sport Utility Vehicle" (SUV), the Lexus LX-450. The LX-450 was only offered for one year and was essentially a Toyota Land Cruiser equipped with high-security locks. In 1998, Lexus dropped the LX-450 and introduced the first Lexus SUV designed and built as a true luxury SUV, the RX-300. (See photograph 1.) The RX-300 has been a huge success for Lexus. In fact, it has been such a success that a stripped-down version will be introduced as a Toyota early in the 2001 model year and sold as the Toyota Highlander.

Both the RX-300 and the Highlander feature bicycle-style cables inside the doors in place of traditional linkage rods. The bellcranks at the ends of the cables are well shielded. This effectively eliminates the use of traditional inside the door tools to unlock either vehicle. This makes the Tech-Train 1015 "Under the Window Tool" (see illustration A) and the Jiffy-Jak Vehicle Entry System the best choices for unlocking either vehicle.

To unlock the RX-300 or the Highlander with the TT-1015 tool, begin by wedging open the base of the window as far forward as possible on the front door. (See photograph 2.) Insert the tool into the door with the tip of the tool pointed to the rear of the car. (See photograph 3.) Once the upper bend of the tool is below the bottom of the window glass, flex and lift the tool so that the upper bend slides up the inner surface of the window glass. As soon as you are sure that the tool is in position to be



1. 2000 Lexus RX-300.



A. The TT-1015 tool.



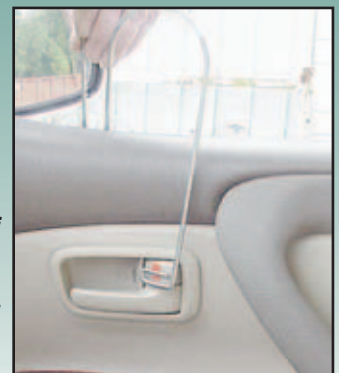
2. The TT-1015 tool is inserted at the forward edge of the front door.



3. Lower the tool until the upper bend is below the base of the window glass.



4. After removing the wedges, pull the tool up along the inside of the glass.



5. Use the tip of the tool to operate the inside lock control rocker.



pulled up on the inside of the door stop and remove the wedges from the door. (See photograph 4.)

It is very important to remove the wedges prior to pulling the tool up on the inside of the door. Failure to remove the wedges can result in breaking the window glass. Once the tip of the tool is free of the inner weather-stripping, manipulate the tip of the tool until it makes contact with the inside lock control rocker. (See photograph 5.) Push the rocker to the rear to unlock the door. (See photograph 6.)

The tip of the tool can also be used to operate the inside power door lock control. For this operation you will need to push down on the rear portion of the power door lock control rocker. (See photograph 7.)

All Lexus products are equipped with an alarm system that will relock the door as soon as you unlock it. It may be necessary to have a second person on hand to open the door at the instant that you flip the lock control rocker to the unlocked position. The alarm reacts very quickly, but the door can be unlocked over and over again.

#### **Quick Reference Guide**

<b>Vehicle:</b> 1998-2000 Lexus RX-300		<b>Code Series:</b> 40000-50000	
<b>Direction Of Turn:</b> Counter Clockwise (pass. side)		<b>Code Location:</b> Pass. door lock	
<b>Tool:</b> TT-1015 or Jiffy-Jak Vehicle Entry System		<b>Key Blanks:</b> Boerkey: 1558PS75, CEA: TT40P, Errebi: TY43P80, Fuki: MT-3, Ilco: LXP90P, Ilco EZ: LXP90, Jet: LXP90PH, JMA: TOYO-18P, Lotus: TY80P, Orion: LXP90P, RR: XPTYA610, Silca: TOY40P	
<b>Lock System:</b> Lexus high-security lock system (internal 4-track)			
<b>Security System:</b> Transponder system standard			




**6. The tip of the tool is used to flip the inside lock control into the unlocked position.**



**7. The tool can also be used to operate the inside power door lock control.**

Eventually, persistence and teamwork will pay off and you will be

able to open the door before it relocks. 

## The National Locksmith.

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Volume II

1987 \* 1988 \* 1989 \* 1990

By Dave Mc Omie

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# Tubular Locks

by Bob Sieveking

Part Six



**W**hether it's spelled "Gemmatic™" or "Gemmatic™" I can't really say. I found both spellings in various catalogs so I guess either will do. The design and servicing of Fort Gemmatic™ tubular locks will offer the locksmith a few special challenges, and some very unique capabilities.



**1** The face of the Gemmatic™ cylinder.

*Photograph 1*, shows the face of the Gemmatic™ cylinder. The cylinder uses an eight-pin configuration. Numbers stamped into the face of the cylinder housing denote the desired operating key. These cylinders will be found on coin operated vending machines, cabinet, and cam locks.

*Photograph 2*, shows the keys that will operate and change the combination of this cylinder. The cylinder can be easily recombined using the "change key." There are eight unique operating keys for this cylinder. By inserting the change key into the cylinder and rotating the key to the desired number on the cylinder ring, the cylinder combination can be changed. If the change key is turned to the #2 position, only the number two key will be enabled. All other keys in the set will be locked out. No tools or disassembly is required.

If you decide that the number two key has been compromised, you can lock out the number two key by using

the change key to rotate the combination to another number. The change key can not operate or unlock the cylinder. It is used to change the cylinder combination only.

My first experience with this cylinder was in the jewelry department of a large store. When they dismiss an employee, or lose track of a key, the store manager can instantly change the combination on all of the jewelry cases and storage drawers in the department. This is a very desirable option for many similar applications.

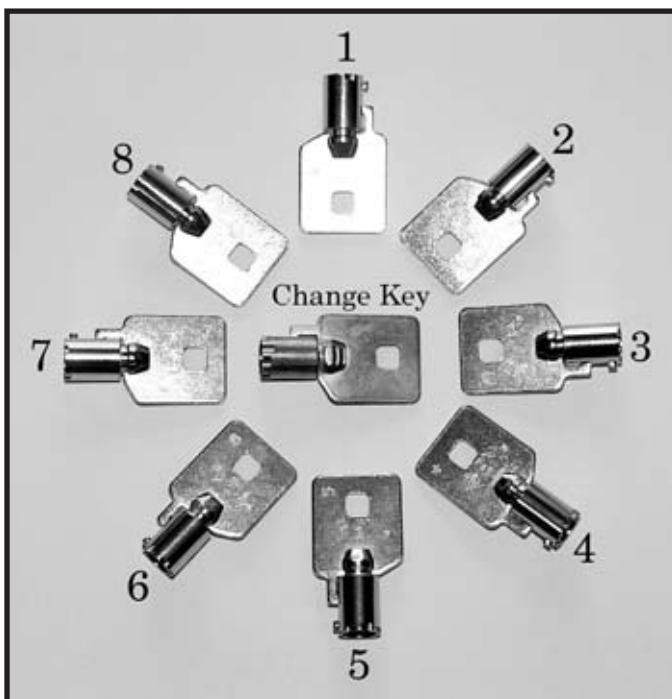
Keys numbered one through eight are standard 137 tubular keys. The "Combination Change Key," however, is unlike the others. The Gemmatic™ change key has eight cuts. *Photograph 3*, shows a detail of the change key. You can see that there is no "internal key." The internal key would engage the keyway in the nose of the rotor to turn the rotor and rotor shaft. There is no external "locating key" either. The external key would insure that the key could only be inserted into the keyway at the key-pull position. It would also act to retain the key in the keyway when the rotor is turned away from the key-pull position. The change key can be inserted, rotated and removed at any position.

To better understand how this cylinder operates let's disassemble it. The barrel retaining pin of the cylinder shown in *photograph 4*, is solid. Some Fort™ cylinders can be found with a tapped retaining pin. Use a 4-40 screw to extract them.

To disassemble this cylinder, center drill the retaining pin using a #50 drill. Then use a 2-56 tap to raise and extract the retaining pin. As the retainer is extracted, the cylinder components can be pushed from the cylinder shell using a follower. (See *photograph 5*.) The special tubular cylinder follower prevents the top pins from springing out of the rotor and being mixed. You

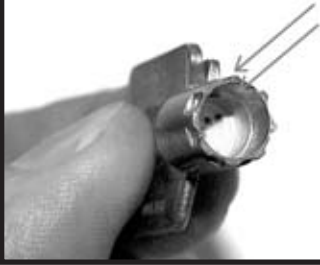
**2**

The keys that will operate and change the combination.

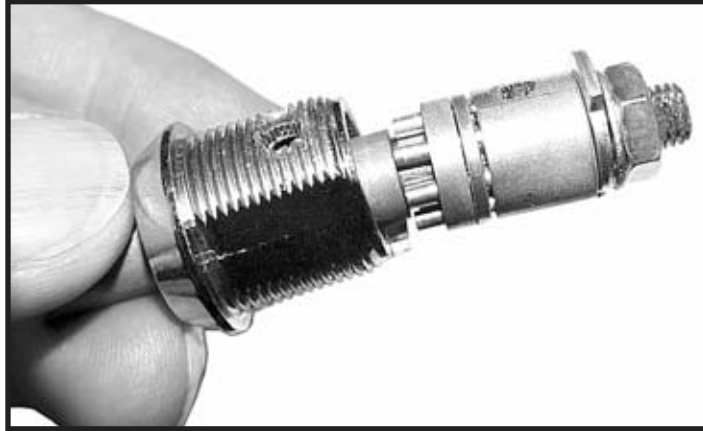




Note that there is no internal "key," or external "key."



**3** A detail of the change key.



**5** As the retainer is extracted the cylinder components are pushed from the cylinder shell.

**4** The barrel retaining pin of the cylinder.



need to remove the rotor and pins carefully, so that you preserve the original combination for decoding.

*Photograph 6*, shows the cylinder assembly in more detail. Note that the follower prevents the combining pins from falling out of the rotor. The rotor of the Gemmatic™ cylinder is different than others we have seen. It is a two-part rotor. The changeable rotor is free to turn on the rotor. The change shear line, between the changeable rotor and the operating rotor, allows the changeable rotor to be rotated independent of the operating rotor, nose and rotor shaft.

The operating rotor is fixed to the rotor shaft and will be used to turn the rotor shaft to operate the cylinder.

**T**he operating shearline is accessed by the operating keys to operate the cylinder. The barrel contains the driver springs and driver pins. Note that we have not removed the limiting disc, lock washer and nut. This will prevent the assembly from separating as it is removed from the cylinder shell.

When the change key is used in the cylinder, it will position the combining pins at the change shear

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line and allow the changeable rotor to turn. Cuts in the change key are four depths deeper than those in the operating key. The drivers or top pins will be in the operating rotor and prevent it from turning.

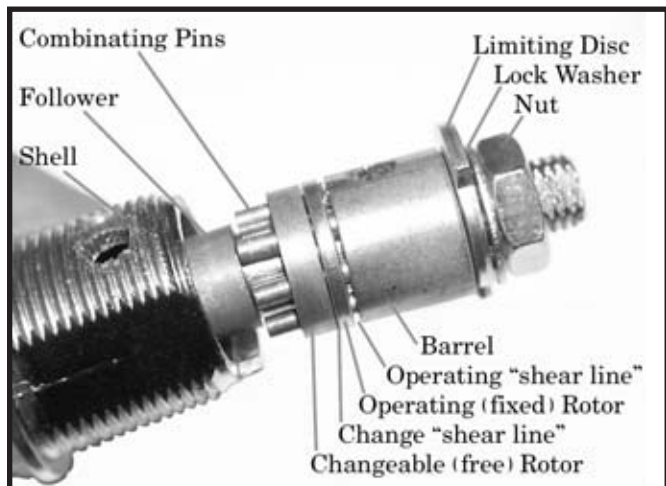
**W**hen the correct operating key is inserted into the cylinder, it will position the combining pins at the operating shear line. With only one exception, cuts in the operating key will be four

depths shallower than those of the change key. The combining pins are pushed into the operating rotor, locking the changeable rotor and operating rotor together. The drivers, or top pins, will be pushed into the barrel, allowing the operating rotor to turn. The operating rotor is fixed to the nose and rotor shaft and act together to rotate the cam or operate the locking mechanism.

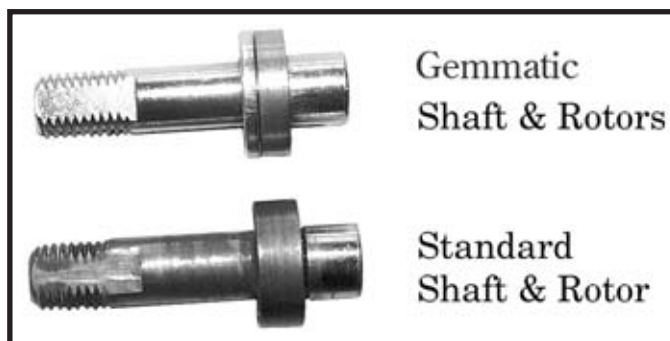
Rotors of the "Standard" and "Gemmatic™" cylinders are shown in *photograph 7*. They appear to be i n t e r -

changeable. The rotor of a standard cylinder measures .185" in thickness. The rotor of the Gemmatic™ measures the same. The operating portion of the Gemmatic™ rotor is .060" thick. The "step" or "increment" of the Fort system is .016" This makes the operating rotor just over four depths (4 x .016 = .064) thick. *Photograph 8*, shows more detail of the Gemmatic™ rotor.

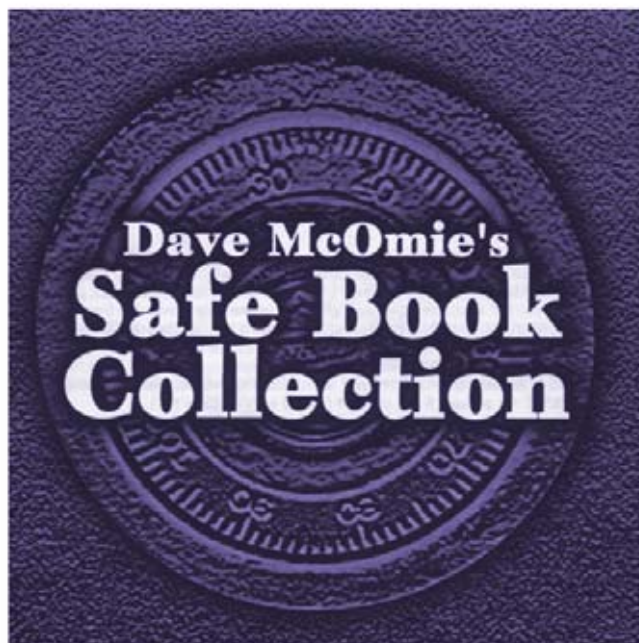
The rotor shaft has two keyways. The keyway you see in the photograph does not extend to the end of the nose. The keyway on the opposite side of the nose extends to the end of the nose, and is used by the operating key to turn the rotor



**6** The follower prevents the combining pins from falling out of the rotor.



**7** Rotors of the "Standard" and "Gemmatic™" cylinders.



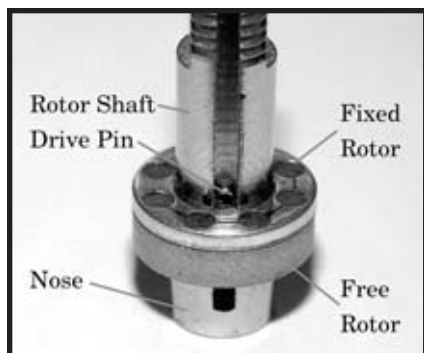
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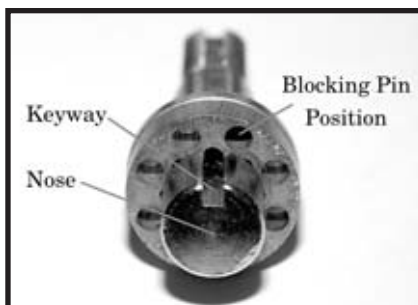




**8** The rotor shaft has two keyways.

shaft. The free rotor is made of sintered metal. It is free on the rotor shaft but is located radially by a spring ball detent. The free rotor detent locates the rotor in any of eight positions. This insures that the holes in the free rotor will accurately align with the holes in the fixed rotor for smooth operation of the combining pins.

The fixed rotor is made of steel. Tabs on the inside of the center hole of the fixed rotor positively locate the rotor to the rotor shaft. A drive pin, seen in the bottom of the keyway, passes through the rotor shaft and

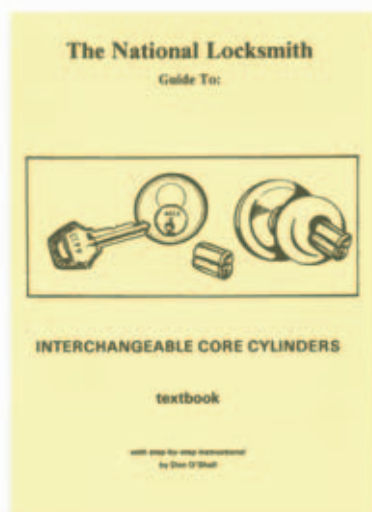


**9** There are eight holes in the free rotor, but only seven holes in the operating rotor.

rests on the top of the locating tabs. The fixed rotor is prevented from separating from the free rotor by the drive pin. The fixed rotor has only seven holes for the combining pins.

*Photograph 9*, shows a front view of the rotor assembly. There are eight holes in the free rotor, but only seven holes in the operating rotor. Position #1 (the first hole right of the keyway) is used as a blocking pin. The combining pin, which would occupy this hole, can not be depressed. There is no hole in the operating rotor at this position. You might think of this as a dead pin or tripper. Operating keys

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#DMCD - 2



inserted into the cylinder will not fully enter the keyway if the cut in this position is not deep enough. This prevents some enterprising pickster from filing the locating keys off of a key that has been locked out, and operating the cylinder.

**T**he blocking action of this pin position establishes the higher security of this cylinder. The top pins (combinating pins), drivers, and springs have been removed from the cylinder in *photograph 10*. The cut depths and pin lengths are shown for each pin in the photograph. Note that there are eight combining pins and only seven drivers. The cylinder only uses seven of the operating cuts of the key.

The eighth pin (in position #1) acts as a blocking pin only. Because the #1 position is blocked by the operating rotor, we must add the thickness of the rotor (4 depths) to the cut depth in position #1 to allow the operating key to fully enter the keyway. The pin lengths show a key combination (clockwise) of: 2-3-1-0-0-3-0. When we add the 4 depths to position #1 (2 + 4 = 6), we find the operating key combination to be: 6-3-1-0-0-3-0. This is the number one operating key.

To find the pattern used and generate the keying chart for the lock you are studying, measure all of the eight operating keys and the change key. I used a Framon tubular key decoder to measure the keys. Most step gauges are calibrated in Chicago Lock Company depths. *Photograph 11*, shows the method used to measure the keys. To measure a cut depth, the unknown cut is pressed against the plunger of the dial indicator, bringing the tip of the key into contact with the base of the indicator fixture. The plunger measures the cut depth, and the measurement is read on the indicator dial. The units scale will read up to one hundred thousandths. The large numbers read clockwise, the small numbers are a reverse scale that is read counter-clockwise. Use the small scale to read the depth.

The small dial, shown in the photograph, indicates multiples of one hundred. The cut being measured reads .1035". One hundred thousandths, read on the hundreds dial, and three and one half thousandths read on the units dial. On measuring all of the keys, I was surprised at the tolerances found in the cut depths. All keys measured were factory cut original keys. All of the keys were measured more than once, to check the accuracy of the measurements. The Framon indicator was calibrated using a feeler gauge and flat.

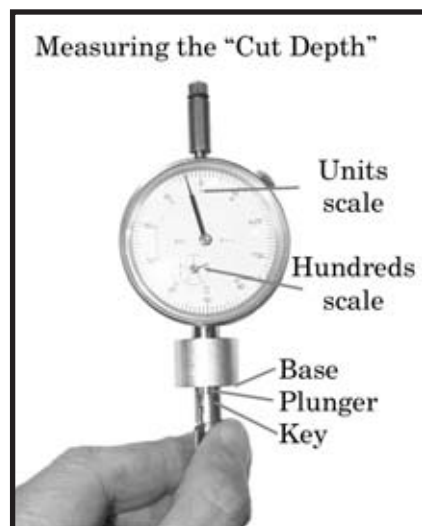
Table "A" shows the result of the key measurement. From this table, the measured depths were converted to standard cut depths using the information from table "B." Table B shows the cut depths, pin lengths, increment, and bushing height (rotor thickness) for Fort™ locks.

Table "C" shows the pattern developed from the previous information. The control (Change) key combination is 6-7-5-4-4-7. The control (change) key, inserted with the locating key side of the bow positioned over the number "1," will position the rotor at the change shear line.

Key #1 is the first operating key. Cuts determined counter-clockwise for key #1 is: 6-3-1-0-0-3-0. Position one shows a #6 depth. This is a #2 depth combining pin plus the thickness of the operating rotor (4 depths). Position #1 is our blocking position. If a key with a cut shallower than a #6 depth is inserted into the keyway, it will be stopped or

Top Pins, Drivers, and Springs			
Clockwise			
1	2	.235	
2	3	.250	
3	1	.221	
4	0	.203	
5	0	.203	
6	0	.203	
7	3	.250	
8	0	.203	

**10** The top pins, drivers, and springs have been removed from the cylinder.



**11** The method used to measure the keys.

prevented from fully bottoming against the rotor by this pin. Note that the cut in position one of the operating key is the same as the cut depth in position one of the control key. Positions two through eight index around, as the key # is changed. Study the information in table "C" to find the pattern developed by rotation of the change rotor.

With a little study, you should be able to develop the table for a similar cylinder by disassembling and measuring the pin lengths or picking then decoding the pick. This cylinder offers no exceptional resistance to picking. You will need an eight-pin pick, however, to manipulate it. I picked this cylinder a few times, and it picked to the operating combination every time.

Decode the pick to find the operating key for the cylinder in the position you found it. With this

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#USOC - 1



### SPECIFICATIONS

**TABLE A. Key Cuts shown Clockwise**

Depths measured using a dial indicator are in inches.

Pos. #	1	2	3	4	5	6	7	8
Control	.104	.124	.095	.080	.080	.085	.118	.070
Key #1	.109	.062	.033	.017	.017	.017	.063	.016
Key #2	.074	.055	.063	.034	.019	.019	.019	.060
Key #3	.127	.016	.052	.064	.034	.018	.018	.018
Key #4	.078	.063	.017	.052	.063	.32	.016	.016
Key #5	.081	.018	.064	.018	.050	.065	.035	.018
Key #6	.078	.016	.016	.065	.018	.050	.064	.032
Key #7	.094	.015	.016	.017	.064	.017	.048	.064
Key #8	.125	.033	.017	.017	.017	.065	.017	.048

**TABLE B.**

Fort Cut Depths		Fort Pin Lengths		Step or Increment: .016		Bushings Height: .185	
#0	.017	X	.185				
#1	.033	0	.202				
#2	.048	1	.218				
#3	.064	2	.233				
#4	.079	3	.249				
#5	.095	4	.264				
#6	.111	5	.280				
#7	.126	6	.296				
		7	.311				

**TABLE C. Keys: Listed by Cut Depths**

This table shows the actual depths, and gives us a better idea of the pattern developed by the rotation of the recombining rotor.

Pos. #	1	2	3	4	5	6	7	8
Control	6	7	5	4	4	4	7	4
Key#1	6	3	1	0	0	0	3	0
Key#2	4	2	3	1	0	0	0	3
Key#3	7	0	2	3	1	0	0	0
Key#4	4	3	0	2	3	1	0	0
Key#5	4	0	3	0	2	3	1	0
Key#6	4	0	0	3	0	2	3	1
Key#7	5	0	0	0	3	0	2	3
Key#8	7	1	0	0	0	3	0	2

information, you will be able to find the control key combination.

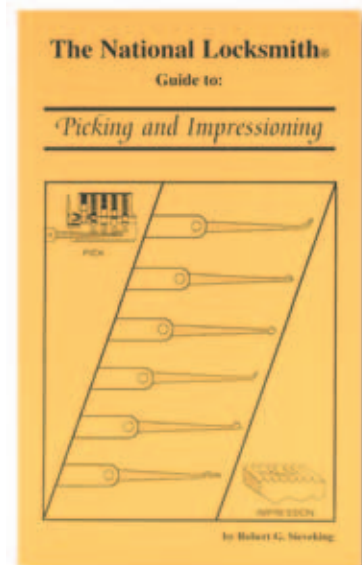
To find the control key combination, subtract "4" from cuts 2 through 8, and hold cut #1 at the measured depth. You will need to modify a 137 key by removing the locating keys from the inside and outside of the key body with a die grinder. Solder or braze the head of the key to the key body before you begin, or the key will fall apart when you remove the locating keys.

Develop the remaining operating keys from the measured operating key cut depths by rotating the cuts as you see in the chart. Use Fort™ depths for smoothest operation. I used the Framon tubular machine to

cut these keys, as it can be calibrated to accurately make Fort™ depth cuts. Most other machines will be calibrated to the Chicago™ depths only.

**T**his article may seem a little complicated, but it contains all of the information you will need to service this type of cylinder. If you can pick the cylinder, you will have all of the information necessary to find any of the operating keys and the change key. If you have one operating key, you should be able to develop the change key and all of the operating keys from the cuts you know. It's just another one of those locksmith puzzles. **IRL**

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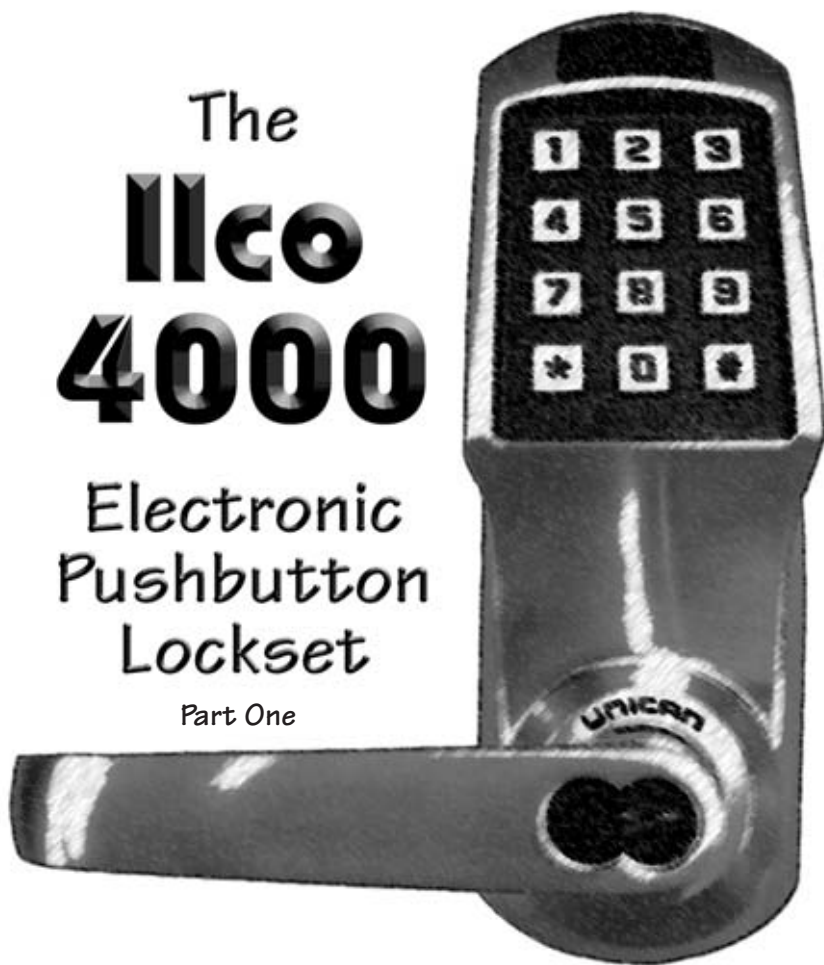


#PI



# The Ilco 4000 Electronic Pushbutton Lockset

Part One



by Richard Allen Dickey

keypad, there is no need for expensive hardwiring or a computer. This means that the 4000 is a true stand-alone lockset. It is fully programmable to grant access to authorized users and can temporarily lockout an individual or a group of users during non-working hours. You can also set the 4000 for free passage, which allows access without an entry code. This is great for those meetings that outsiders need to attend.

While we are talking about entry codes, you have up to one million different codes to choose from. The master code is an eight-digit code. The manager codes need to be seven digits while all others can be from three to six digits.

The code hierarchy starts with the master code. Under the master code there are three manager codes. Each manager has six users in that group. The master code and manager codes are not access codes. They are only used for programming changes. The six user codes in each of the three groups are the only entry codes available. If your math is good, you can see that there is a total of 18 access codes that can be programmed to open the door.

If you are used to the large number of available user access codes with some other locks, remember that this lock is not designed to create an audit trail. If there is no audit trail, there is no need for each individual to have their own code. If the lock is used for a main entrance, groups of people can use the same code.

If someone attempts to guess an access code, they better do it in only four tries. Why? Because on the fourth failed attempt, the lock goes into a temporary shut down condition. This can last from 1 to 15 minutes depending on how you set the programming. That's right. Even the shutdown time is programmable from the keypad, if you have the master code.

While the lock is in shutdown mode, even a valid access code will not open the door. But don't forget that the key override will work any time. Turning the key will allow the outside lever to open the door. However, just turning the key will not open the door.

The 4000 is shipped handed at the factory. In this case, it was shipped left-handed. To change the handing of the lock, there are several steps you have to go through.

**Ilco Unican** is one of those companies that has been around for a long, long time. It shows in their vast assortment of products and their product quality. Ilco Unican is a world leader in the manufacture and sale of key blanks, key machines, mechanical pushbutton locks and electronic access controls.

I thought it would be fun to take apart one of their proven products and look at the quality inside the lock, so I decided on the 4000 series electronic pushbutton lockset.

The Ilco Unican 4000 series came out in late 1998. It is an all weather, heavy-duty, cylindrical, programmable lockset. That was a mouth full! The 4000 is designed to accept Best, Falcon, Arrow and compatible interchangeable core cylinders in the outside lever.

The mechanical key override will allow emergency access from the outside if required. The inside lever is always free. This is one of those locks that is ideal for heavy use areas like hospitals, university dormitories, commercial, government or industrial buildings. Let's look at some of the features that the 4000 has to offer.

The 4000 is a complete self-contained electronic lock that uses four, off the shelf, alkaline batteries as its power source. The batteries are expected to last for five years or 80,000 openings. Whichever comes first. There is an audio and visual indication when the batteries get down to their last 2000 operations.

The 4000 is designed for heavy-duty use and meets or exceeds ANSI/BHMA 156.2 Grade 1 compliance. It also carries a UL fire rating for a 3-hour "A" labeled door.

Because the 4000 is programmable at the lock through use of the

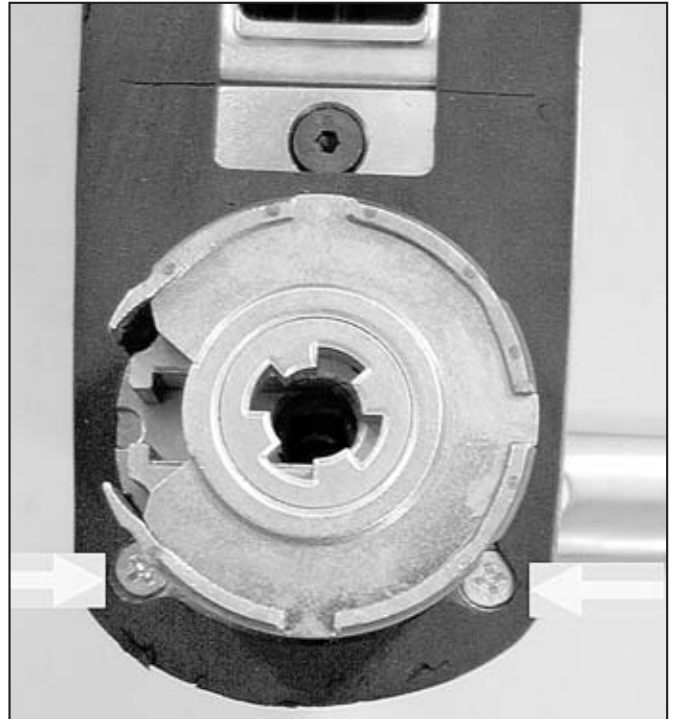


Continued from page 58



**1. The outside lock housing as viewed from the front.**

**2. Two Phillips screws that hold the cylinder drive assembly to the outside housing.**

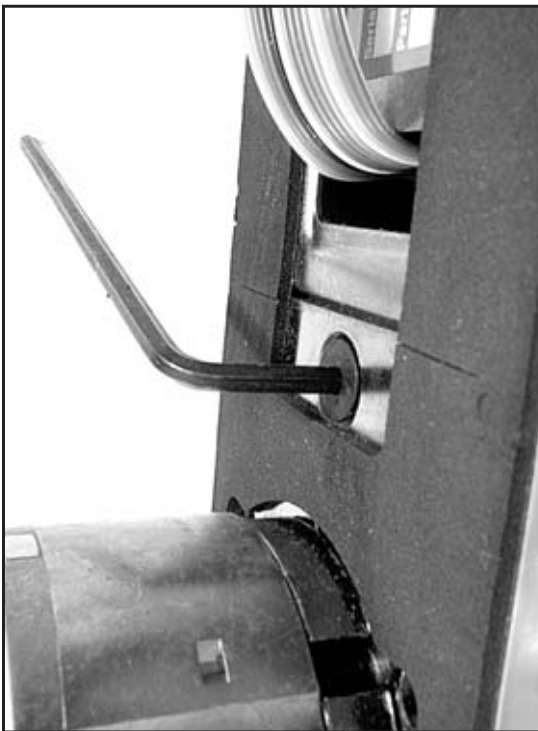


First we will change the settings on the outside housing assembly. (See photograph 1.)

- \* Remove the two Phillips screws located on the bottom edge of the outside housing. (See photograph 2.)
- \* Remove the hex screw located just below the ribbon cable. (See photograph 3.)
- \* Pull the cylinder drive assembly from the outside housing. (See photograph 4.)
- \* Remove the four hex screws from the bottom of the cylinder drive assembly. (See photograph 5.)
- \* Remove the attachment plate (see photograph 6) and rotate the attachment plate 180 degrees. (See photograph 7.)
- \* Reassemble the attachment plate to cylinder drive assembly. (See photograph 8.)
- \* Photograph 9 shows what we accomplished with the previous steps.

Before the cylinder drive assembly can be reattached to the outside housing, there is a little more work to do.

- \* Remove the stop plate by lifting it from the lever drive with pliers and a screwdriver. (See photograph 10.)
- \* Rotate the outside lever 180 degrees and remove the stop pin indicated by the arrow. (See photograph 11.)
- \* Replace the stop pin in the right handing hole. (See photograph 12.)
- \* Remove the torsion spring and replace it 90 degrees CCW to its original position. (See photograph 13.)
- \* Photograph 14, shows a close up view of the stop plate and the torsion spring.
- \* Reinstall the stop plate in its original position. The stop plate will actually be contacting the opposite side of the torsion spring than it was in its originally configuration. (See photograph 15.)
- \* Replace the drive assembly on the outside housing and replace the three screws. Now lets move to the inside housing.



**3. The third screw that holds the cylinder drive assembly in place is a hex head screw.**



**4. The cylinder drive assembly removed from the lock housing.**



The inside housing has a few changes that need to be made before the handing change is complete.

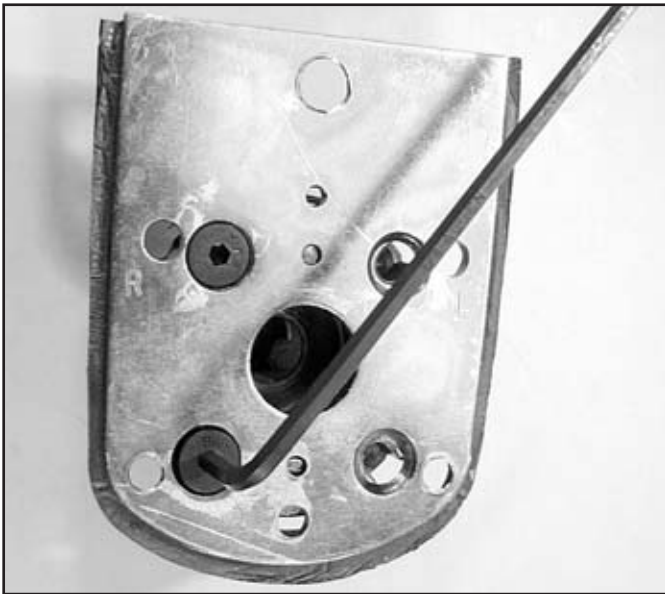
- \* First remove the Phillips screw on the cover. (See *photograph 16.*)
- \* *Photograph 17,* shows the next three pieces that need to be moved.
- \* Remove the crescent shaped spacer and the torsion spring. Reinstall them to their new positions. (See *photograph 18.*)
- \* Remove the hand siding pin and replace it in the proper handing position. (See *photograph 19.*)
- \* Replace the cover and flip the housing over so you can see the opposite side.
- \* Note the "R", "L" and a small line indicated by the arrows in *photograph 20.* The line located on the drive disk should be turned to align with the "R" or "L", depending on handing desired.



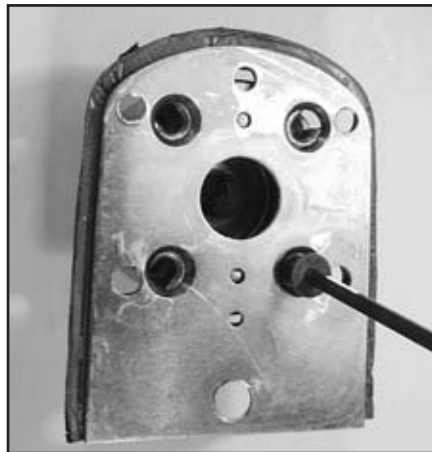
**6. Attachment plate before rotation for hand change.**



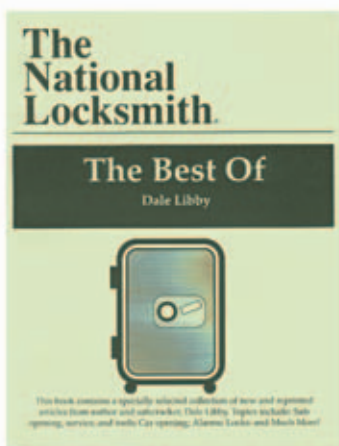
**7. Attachment plate after rotation.**



**5. Removing the attachment plate of the cylinder drive assembly to allow for hand changing.**



**8. Replacing the attachment plate.**



## The Best of Dale Libby

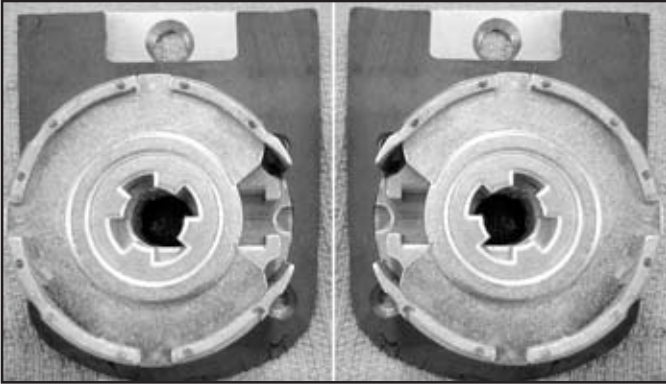
These are the articles that started  
the safe opening revolution.

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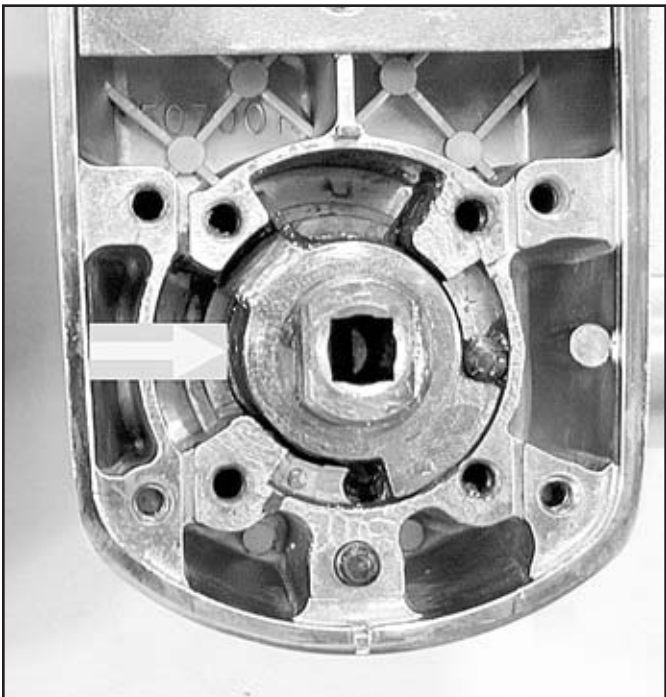


#DALE





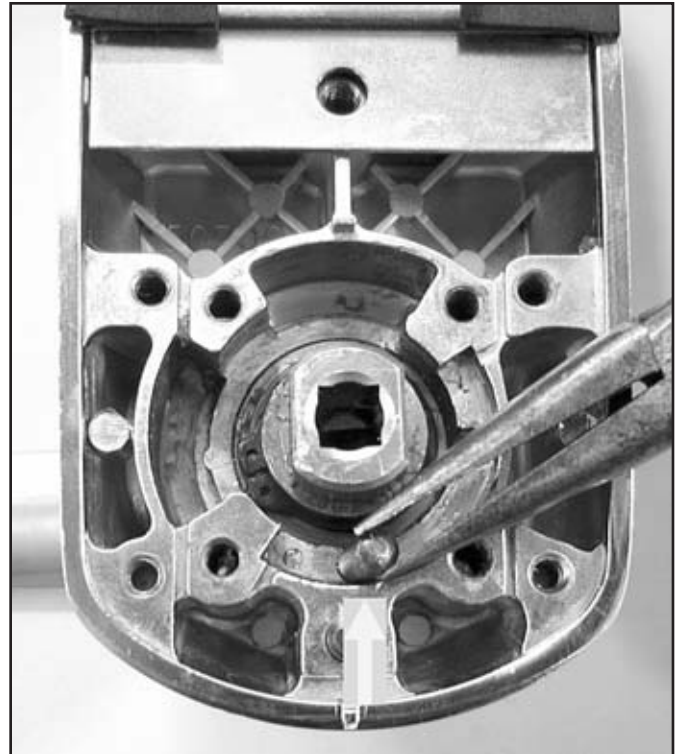
**9.** This is what was accomplished by removing, rotating and replacing the attachment plate.



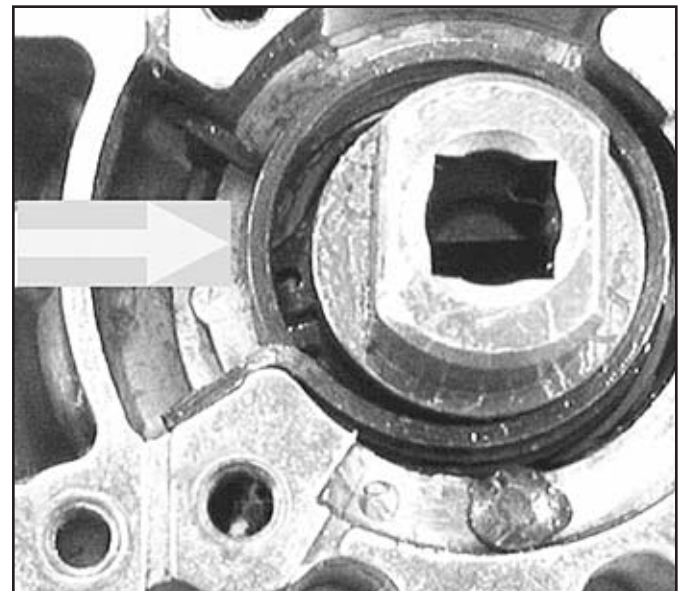
**10.** The stop plate attached to the outside lever drive.



**11.** Location of the stop plate pin before changing the hand of the lock.



**12.** New location of the stop plate pin.



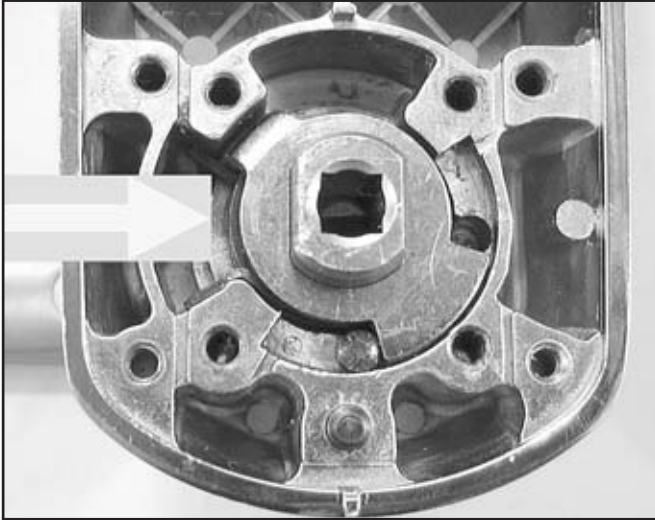
**13.** Replacing the torsion spring in the new handing position.



**14.** A close up of the torsion spring and the stop plate.



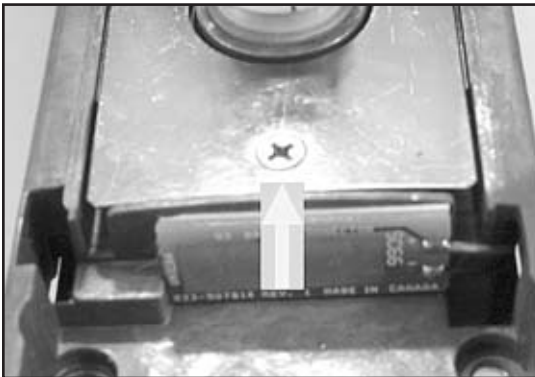
Continued from page 62



**15. Reinstalling the stop plate.**



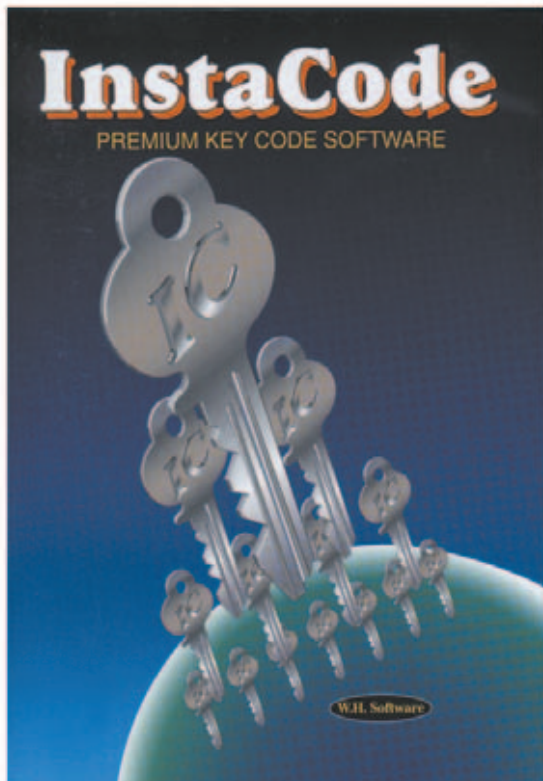
**17. The three parts that need to be moved to change the handing.**



**16. Cover plate removal to allow for hand changing of the inside housing.**

If you think that we took a lot of time on the handing change, I agree. However, I think it is important to point out the steps involved since there are so many. Now I want to show you the actual motorized drive assembly.

The motorized drive assembly is located in the inside housing. There are five screws that hold on the cover that allows access to this area. One note of warning before we continue. There is a tamper sticker over two of the screws that will void the warranty if removed. (See photograph 21.) As you can see in the photograph, I removed the sticker to remove the screws.



#IC - 2002

## InstaCode 2002

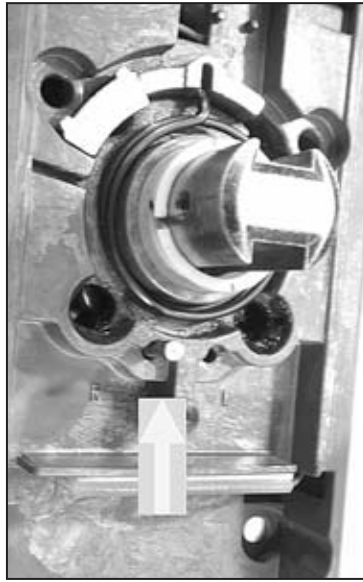
InstaCode 2002, the latest release of InstaCode, includes over 5000 code series covering general/utility, padlock, vehicle and motorcycles.



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**18. Crescent shaped spacer and the torsion spring moved to their new location.**



**19. Relocation of the hand siding pin.**

Photograph 22, shows the inside housing with the cover removed. The drive assembly is connected to the control board with a small cable. (See photograph 23.) The top of the control board has the connector for the weatherproof keypad as well as a connector for an external remote unlock button. (See photograph 24.)

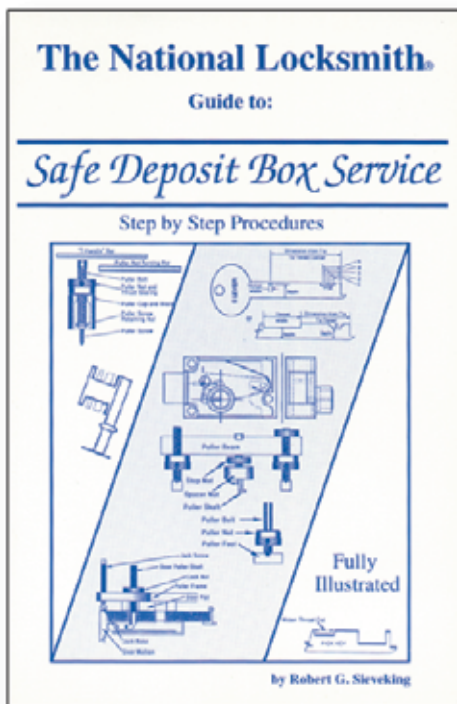
The drive motor itself uses a worm gear (see photograph 25) to move a lever that engages and disengages the drive disk with the outside lever. (See photograph 26.) While we



**20. A view of the drive disk on the back of the inside housing, along with the "L", "R" and alignment marks.**



**21. Cover for the main circuit board and drive motor.**



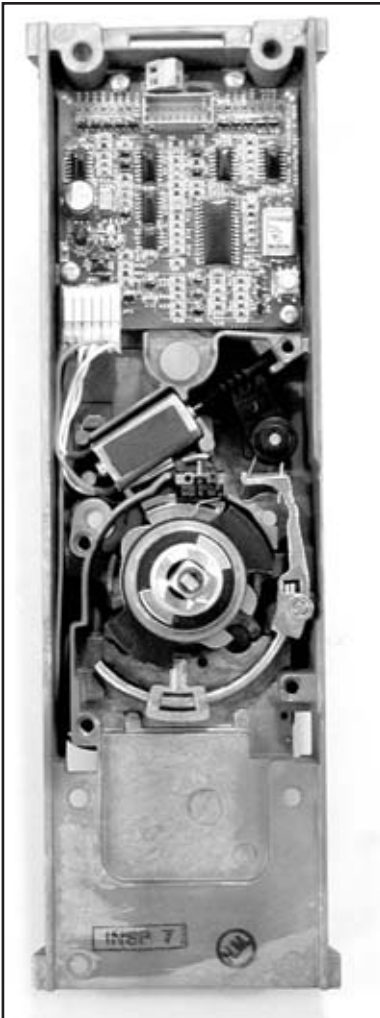
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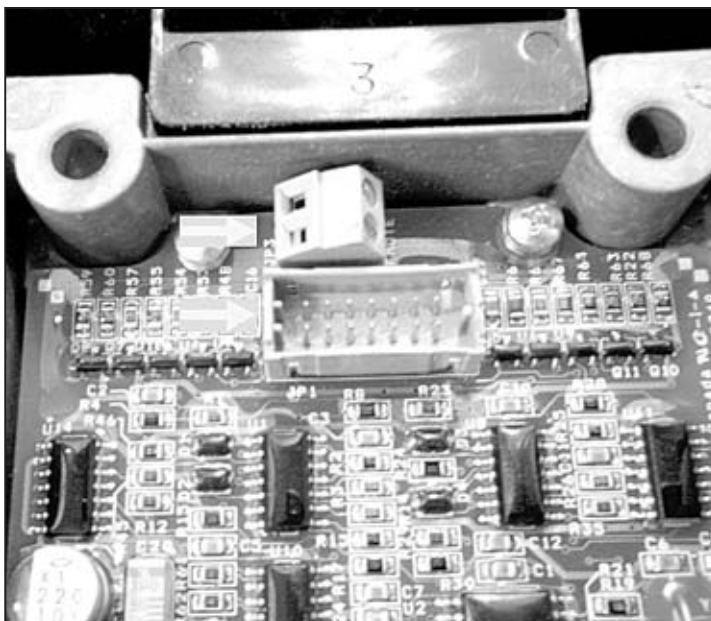




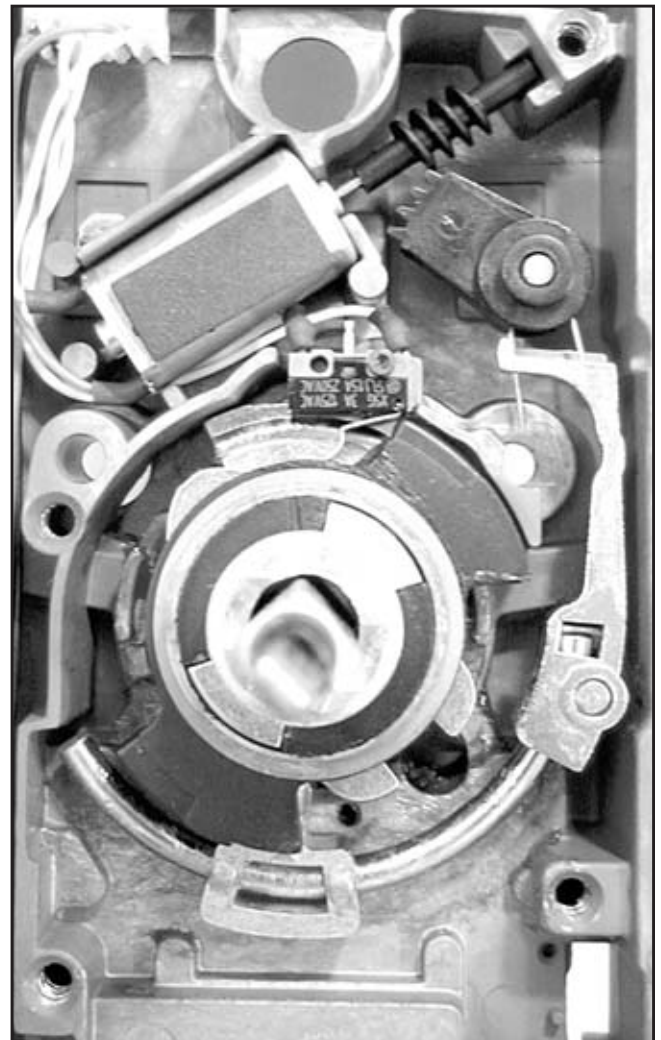
**22. The main circuit board and drive motor with the cover removed.**



**23. A look at the drive motor and its attachment to the main circuit board.**



**24. The connectors for the keypad and remote open switch.**



**25. Motor drive in the engaged condition.**

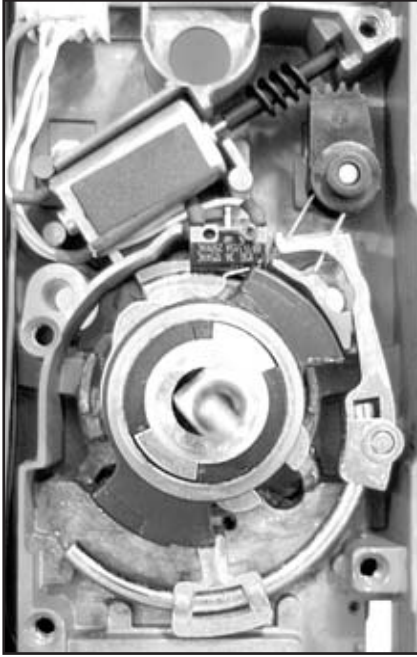
are looking at the locks insides, lets take a look at the keypad and see what makes it waterproof.

The keypad is supposed to be waterproof, not just water-resistant. After taking the keypad apart, there is little doubt in my mind that they are right to say waterproof. Let me show you why.

The keypad is protected by the heavy outside housing of the lockset. After removing the cover, the back of the keypad is



Continued from page 66



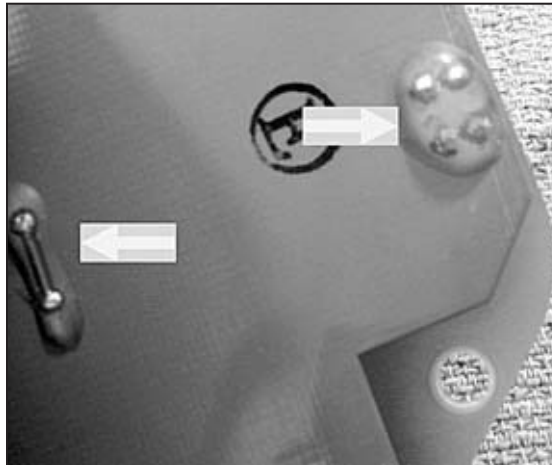
**26. Motor drive in the disengaged condition.**



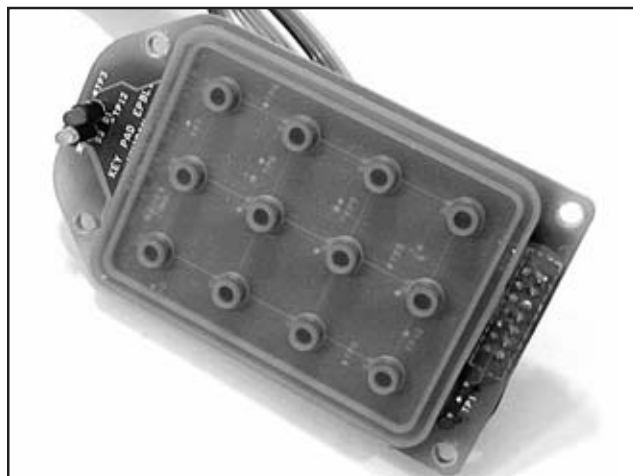
**27. Back side of the keypad circuit board.**



**28. View of the keypad with the circuit board removed.**



**29. The protective coating on the circuit boards metal parts.**



**30. Rubber keypad cover. This cover is sealed around the edges and is located between the circuit board and the metal keypad buttons.**

exposed. (See photograph 27.) Four screws hold the keypad in place. Removing the four screws exposes the 12 metal buttons that stick through the front of the outer housing. (See photograph 28.)

There are two things that make the keypad circuit board waterproof and one thing that makes it very durable. First, you can see in photograph 29, that the metal parts on the circuit board are covered with a clear plastic material. Second, the rubber cover that is between the circuit board and the metal buttons, is sealed around the edges. (See photograph 30.) Water will never touch the metal parts on the circuit board. If water can't touch the metal parts, the circuit board will never fail from water exposure.

Last but not least, the circuit board is very thick. It measures 100 thousandths. (See photograph 31.) That is about twice as thick as a typical circuit board. This means that someone punching the buttons instead of pressing them, is a lot less likely to cause damage to the circuit board.

I want to touch on one more thing before I go. There is a short process that you have to perform to set the lock up for a different door thickness. It involves removing the cylinder drive assembly. If you remember, the cylinder drive



**31. The circuit board measures 100 thousandths thick. About twice as thick as a typical circuit board.**

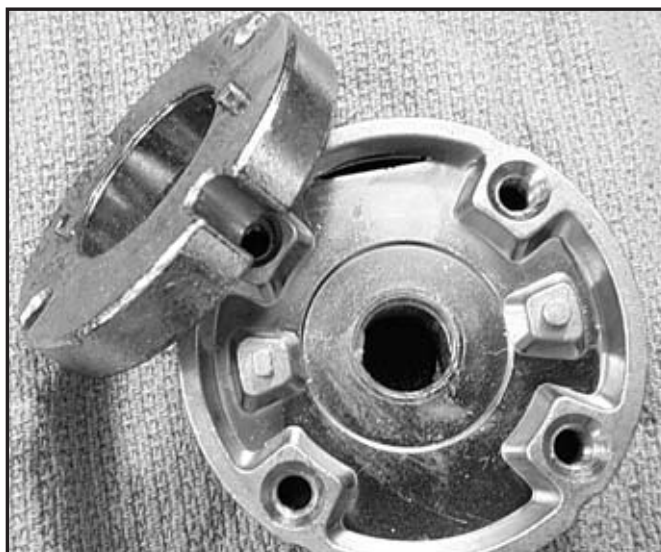




**33. The spacer used for a 1-3/4" door, leaning against the cylinder drive unit.**

assembly was removed to change the handing of the lock a little earlier.

The 4000 can be adjusted from 1-3/8" to 2-1/2" with the 2-1/4" and 2-1/2" being optional. Adjustment is accomplished through adding or removing spacers. The spacers are provided as well as the longer or shorter screws needed to install the lock after adjustment. (See photograph 32.) The spacers go between the attachment plate and the cylinder drive unit. Photograph 33, shows the spacer for a 1 3/4" door leaning against the cylinder drive unit.



**32. Spacing adapters that allow the 4000 to be adjusted for most any door thickness.**

Although there are a lot of steps to adjust this lockset, the end result is a very solid lock. Enough for now, next time we will go through the installation process for the Ilco 4000. I will also introduce a special installation jig from Major Manufacturing called the HIT-104, designed just for the Ilco 4000 series. See you then.

For more information about the 4000 series electronic pushbutton lockset from Ilco Unican, call 1-800-849-8324 or fax a request to 1-336-722-8814. You can even visit their web site at [www.ilcounican.com](http://www.ilcounican.com). Circle 304 on Rapid Reply. **TRL**



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# TRANSPONDER TECHNOLOGY

by Michael Hyde

## WHAT IS A TRANSPONDER?

A transponder is short for: transmitter + responder. The word was invented around 1944. In basic terms a transponder is a miniaturized electronic chip that has what is called nonvolatile memory. Nonvolatile memory is the type of memory that does not need constant energy for retention. Along with that electronic chip is a set of windings, very fine wire coiled around a tube. These windings look similar to the windings you would find in an electric motor.

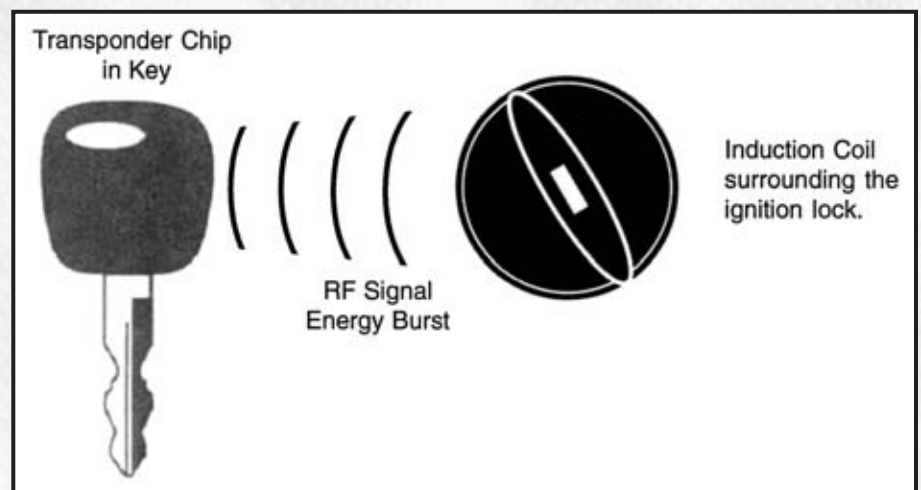
There are two basic types of transponders. The first are the Electric Coupled transponder systems. Electric Coupled transponder systems are not limited to small areas for transmission but can transmit messages or signals for different ranges of distance including several inches to miles, as used in satellites and airplanes. These systems require large amounts of constant electricity to operate.

The second type is what automobile manufacturers are using and they are called Magnetic Coupled transponder systems. Magnetic Coupled transponder systems are passive in nature. This means they do not require constant electricity and thus do not need a power source of their own. They operate in the frequency range area of 125KHz. Since Magnetic Coupled transponders do not have their own power source they are very limited to range of communication and generally operate in the range of 1cm to 15cm. Since this is a radio frequency it can penetrate materials that would make the transponder not directly visible, such as the plastic or rubber in the bow of a key.

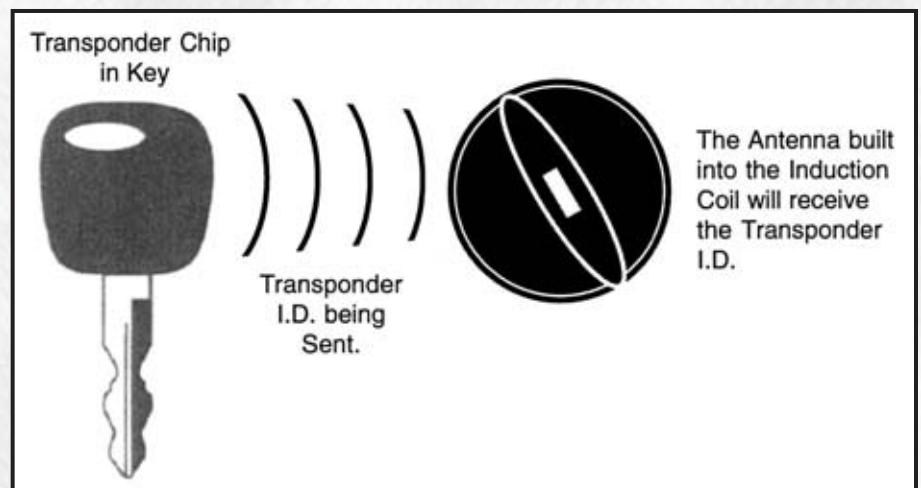
The process of key identification is similar in most automotive

transponder systems. Once a key is inserted into the ignition lock and turned to one of the 'On' or 'Run' positions, the induction coil that is mounted around the ignition lock sends out an electromagnetic field of energy. (See illustration A.) The windings in the transponder chip absorb that energy and power the electronic chip to emit a signal. The

signal is usually an alphanumeric set of digits, which is considered the Identification Code. The induction coil reads the signal and sends it to some type of computer device to recognize the signal. (See illustration B.) If the signal is recognized as being already in the computer's memory the signal is accepted and other electronic components in the vehicle are set into



A. The induction coil sends out an electromagnetic field of energy.



B. The windings in the transponder chip absorb that energy and power the electronic chip to emit a signal.



**1. There are a few different producers of transponder each with their own shape and design.**



**2. The Induction Coil is nothing more than fine copper strands of wire encased in a circular plastic holder.**

motion to allow the starting of the vehicle or the continuation of the engine running.

Transponders can be made into several different shapes and sizes and can be used in many different types of applications such as: warehouse pallets, retail clothing, animal management, and of course electronic automobile key identification.

Most car manufacturers use almost identical systems for all their cars, with variations. There are a few different producers of transponder chips for the U.S. Market and they each have their own shape and design. (See photograph 1.)

#### **INDUCTION COIL**

The Induction Coil is nothing more than fine copper strands of wire encased in a circular plastic holder that is mounted to the face of the ignition lock in one form or another. (See photograph 2.) The Induction Coil outputs the electromagnetic field to energize the transponder and then receives the signal from the transponder.

#### **GENERAL INFORMATION**

1997-1998: The locksmith and the dealer can program transponder keys into the system on this vehicle. As many as 16 keys can be programmed into the car.

1999: A New Generation Star Tester (NGS) is needed to program

**1997-99 Ford Expedition &  
1997-99 Lincoln Navigator.**

*(See photograph 3.)*

**Manufacturer:** Ford/Lincoln

**Model:** Expedition/Navigator

**Models with Transponder:**

1997: Optional; 1998-99: Standard

**Transponder Brand:** Texas Instruments

**Transponder Type:** Fixed Number

**Maximum Number of Keys:**

1997-98: 16 Keys, 1999: 8 Keys

**Code Series:** 001 X-1706X

**Master Keyblank Part #:**

598333 (Strattec)

**Valet Keyblank Part #:** N/A

**Aftermarket Master Keyblank:**

Jet: H72-PHT, Strattec: 598333,  
Iico: H72-PT

**Locksmith Programmable w/ No Keys:**

1997-98 Yes; 1999 Special  
Equipment Required

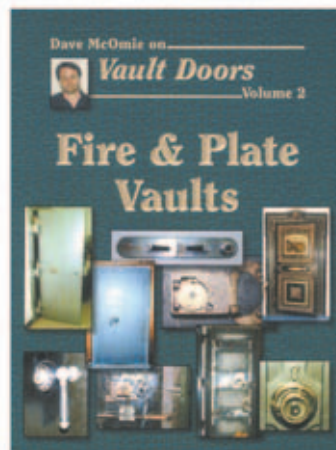
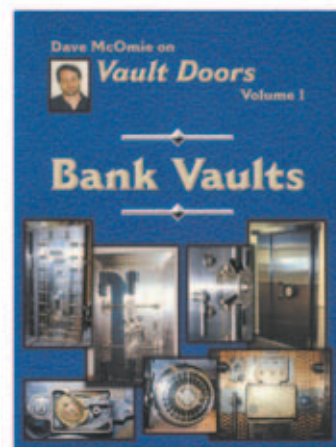
**Dealer Programmable w/ Keys:** Yes

transponder keys into the system on this vehicle. As many as 8 keys can be programmed into the car.

The system on this car is called Passive Anti Theft System (P.A.T.S.). But it also may be referred to as SecuriLock. In the United Kingdom it may be referred to as Safeguard.

A dealer device can also be used to program the transponder keys into the car's computer. The dealer device is

## **Dave McOmie on Vault Doors Vol. 1 & 2**



These openings can be a nightmare, but not when you bring Dave McOmie along with you on the job.

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3. 1999 Ford Expedition



and then enable or disable the Power Control Module (PCM) which supplies current to certain engine systems.

#### **SYSTEM COMPONENTS**

##### **1. The Ignition Key:**

The ignition key is an 8-cut P.A.T.S. key. The P.A.T.S. utilizes a special key with an offset hole in the bow for the key ring. (See photograph 4.) The plastic bow of the key is also larger than normal. The key has a transponder chip mounted permanently in the plastic part of the bow of the key.

The P.A.T.S. transponder chip is in the plastic bow of the key. This transponder chip is actually a very small electronic device that is comprised of a microchip and induction coil, encased in a solid glass tube. (See photograph 5.)

##### **2. P.A.T.S. Control Module:**

The P.A.T.S. Control Module is located behind the instrument cluster in the dash.

##### **3. The Power Control Module:**

The Power Control Module is located in the engine compartment.

##### **4. The Induction Coil:**

This ignition uses an active retainer that can easily be accessed through a hole on the bottom of the shroud. The induction coil is mounted on the ignition lock cylinder housing behind the plastic steering column shroud. (See photograph 6.) The induction coil does not interfere with ignition cylinder removal.

#### **PROGRAMMING NEW TRANSPONDER KEYS**

Programming can also be carried out by using the New Generation Star Tester. Average time using tester is 10-minutes. (See photograph 7.)

##### **1999 Models:**

Programming can ONLY be carried out by using the New Generation Star Tester.

##### **1997-1998 Models:**

##### **Programming When No Other Working Key Is Available**

1. Put the newly cut key into the keyway and turn it to the ON (RUN) position. A theft indicator light on the dashboard will flash for 15-minutes.

2. Within 5-minutes after the indicator light stops flashing, turn the ignition to OFF, then return to the ON (RUN) position. The indicator light again will flash for 15-minutes.

called the New Generation Star Tester. Programming with the tester can be as short as 10-minutes.

#### **HOW IT WORKS**

There is an induction coil with an antenna ring (encased in a circular plastic trim piece), surrounding the ignition cylinder. When activated by the key a radio frequency signal is sent out in a circular tunnel field. This tunnel field is usually within in a 2-3cm area. The close area field is necessary so as not to pick up other transponder signals.

When you insert a transponder key into the ignition cylinder the antenna ring will energize the transponder pellet (chip) in the bow of the key.

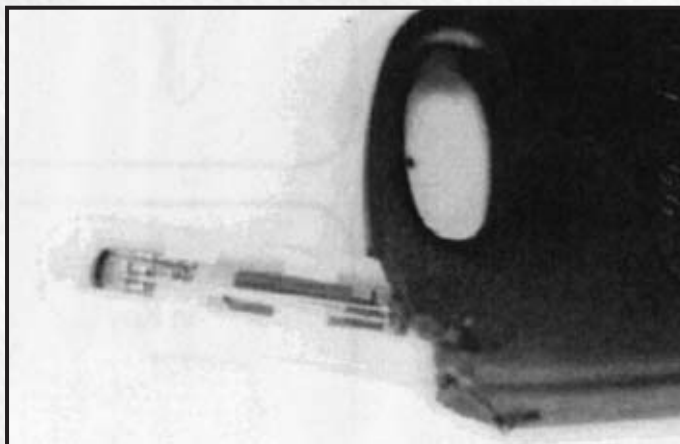
Once the pellet (chip) in the bow of the key is energized it sends a radio frequency (RF) signal back to the antenna ring. This signal is made up of a unique alphanumeric value. The P.A.T.S. module will activate when the key is inserted and rotated to the "RUN" or "START" position.

The P.A.T.S. control module will interrogate the key transponder and determine if it is a preregistered signal

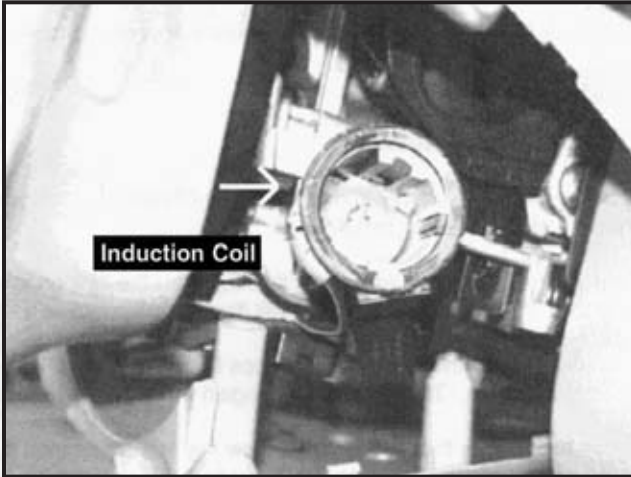


4. The Ford P.A.T.S. ignition key.

5. The P.A.T.S. transponder chip is in the plastic bow of the key.







6. The induction coil is mounted on the ignition lock cylinder housing behind the plastic steering column shroud.

7. The New Generation Star Tester (NGS).



3. Again, within 5-minutes after the indicator light stops flashing, turn the ignition to OFF, then return to the ON (RUN) position. The indicator light again will flash for 15-minutes.

When the light stops flashing for the third time, the new key is programmed into the computer and will start the car. All previously stored codes will be erased. To stop the process at any time, simply remove the key and use an existing key to start the car.

#### **TO CREATE A SPARE KEY**

As many as 16 keys, each with its own individual electronic code can be programmed into the computer for a vehicle equipped with P.A.T.S.. The system will ignore attempts to enter a 17th code. If a key that is already programmed into the computer is available, programming another key only takes seconds.

1. Place an already programmed key in the keyway. Cycle the ignition from OFF to ON (RUN) to OFF.

2. Within 15-seconds, insert the new, properly cut P.A.T.S. key in the ignition. Turn the key to ON (RUN) or

START. The theft indicator light will go on for two seconds, after which the key will start the vehicle.

3. Repeat the second step for each new key to be programmed.

4. If the light flashes for 15-minutes, too much time elapsed between cycling of the already programmed key and the new key. If this happens, simply start over. If the light flashes for 1 minute, the new key is defective or is not a P.A.T.S. key. Start again with a different key. To stop the process at any time, simply remove the key and use the pre-existing key to start the car.

5. To remove any key code from the system, erase all stored codes using the programming mode and re-enter the desired spare keys.

For a complete digest and source of information for transponder equipped vehicles, *The National Locksmith* has available *The Guide to Transponders* by Michael Hyde, the most concise source of transponder information available. This book and many other technical manuals can be found at *The National Locksmith's* web site: [www.TheNationalLocksmith.com](http://www.TheNationalLocksmith.com). **TNL**

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# The NDC Solution

by Jake Jakubowski

**C**oncealed floor closers, such as Rixson's #27 offset floor closer, can present a major service challenge to the average locksmith. (See photograph 1.) In fact, beyond a few simple adjustments (providing the floor check is functional), most locksmiths shy away from trying to adjust, repair or replace these closers when they malfunction. Because of the problems that are associated with servicing floor checks, most locksmiths will walk away from the replacement of these closers because of the level of difficulty involved in working on these units. Especially after that closer has been in the floor for years and the elements, corrosion, leaking oil and age have literally welded the closer into the concrete floor.

Up until a couple of years ago my idea of a fun and profitable day did not include jack hammering a recalcitrant floor check out of the floor. I discovered National Door Controls and found out that it wasn't necessary to become a Demolition Demon to resolve a simple closer problem for my customer. Anyway you look at it, the bottom line is;

1. A Rixson #27 Floor Check. These units give many locksmiths nightmares when it comes to thinking about servicing it.



2. A Rixson #40. Compare the size of this one to the #27. It looks like the USS Eisenhower!



3. The lower right-hand corner for this #27 is broken. It is this sort of damage that can easily occur when trying to remove these units from the floor.



4. The NDC Pivot Deactivator Kit. From top to bottom, left to right: Spacers for raising sleeve; Bushing for proper fit on different pivots; Sleeve; Bearing; Deactivator Hinge Assembly and screws.







5. The sleeve (with spacers and bushings where needed) is the "guts" of NDC's Pivot Deactivator system.



6. The NDC sleeve and bearing on the Rixson pivot.



7. The pivot on the left side of the door has failed completely. The oil, dirt and discoloration indicates leaking seals.



8. The right hand pivot is not leaking as badly as the left but needs replacement.

a floor check is really just a closer. A closer concealed in the floor, but a closer none-the-less.

Not only did NDC show me how to solve my customer's closer problem (including overhead concealed and double action concealed floor checks) they showed me how to do it quickly, easily, and most importantly, profitably!

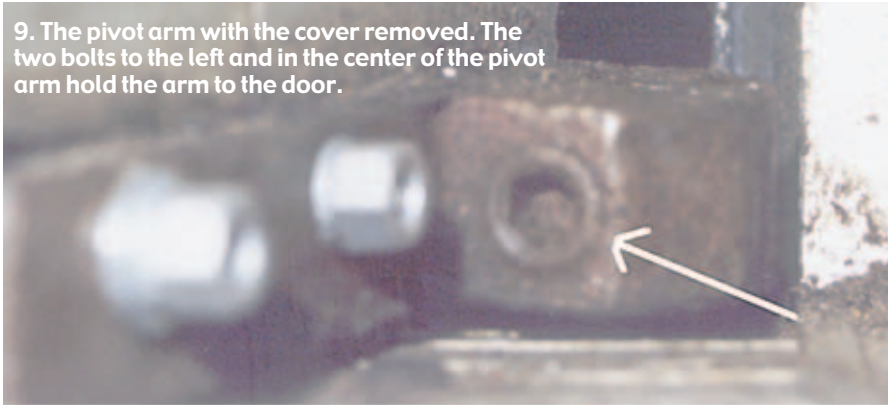
*Photograph 2*, is of a Rixson #40 floor check. Compare the size of the #40, to the previous #27.

One of the incidences that can occur when removing a floor closer can be seen in *photograph 3*. Note the broken corner on the closer. This is incidental damage that can occur when removing these pivots from the floor. Fortunately, with the NDC's Pivot Deactivator it is not necessary to remove the floor check to rectify floor check problems.

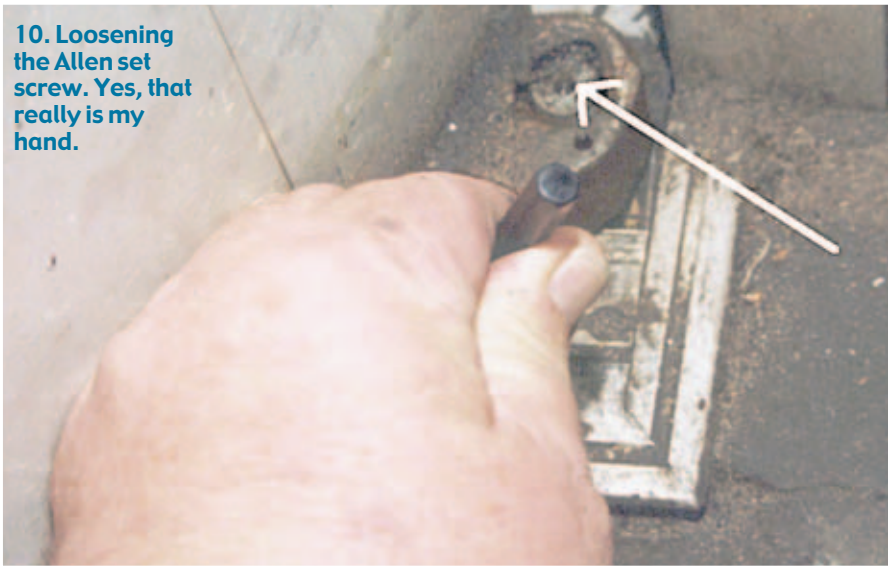
This is National Door Controls, #101 Pivot Deactivator Kit. (See *photograph 4*.) The #101 allows me to neutralize concealed floor checks like Rixson, Door-O-Matic, Pittco and others. I still have to take the door down to install NDC's kit and re-hang the door and install a surface mounted closer — but it sure beats digging up the floor closer! Plus, the cost per door is a lot less then the \$900 (manufacturer's suggested retail price for a Rixson #27) not including installation!



9. The pivot arm with the cover removed. The two bolts to the left and in the center of the pivot arm hold the arm to the door.



10. Loosening the Allen set screw. Yes, that really is my hand.



The sleeve and bearing is the “guts” of N D C ’ s P i v o t Deactivator System. (See photograph 5.) As an example, here a sleeve and bearing is shown on a Rixson #27. (See photograph 6.)

When a medical facility called me to do something about their door —actually, a pair of doors — I was ready.

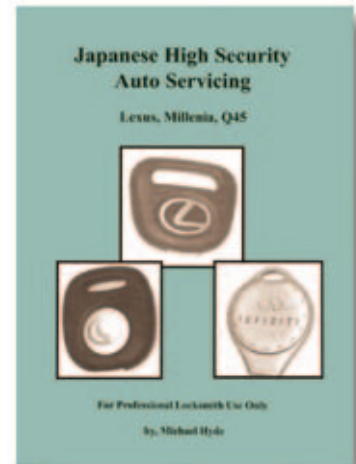
As you can see in photograph 7, the oil was leaking out of the floor check and collecting dirt and debris. What you can't see is the way the door slams when it closes and the fact that the adjustment screws have no effect on either the closing speed or latch speed of the unit. This is primarily due to the fact that there is little oil left in the closer to pressurize the unit. Also, if you look closely, you can see where a pivot arm screw is dragging because the door settled.

The door on the right side is not leaking quite as badly as the left, but the lack of control is evident in this door too. The arrows show the screws that hold the



11. Sometimes the pivot arms are so badly frozen to the floor check's pivot that they have to be drilled, hacked, broken or chiseled away.

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#JAP - 1



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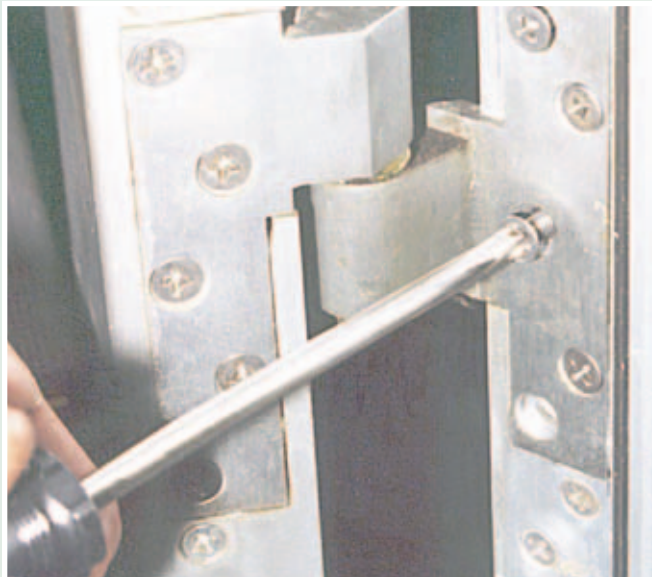


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**12. A pivot arm in pieces after it refused to yield to gentler methods of removal. Sometimes you just have to get through.**



**13. Removing the screws from the jamb-side leaf of the offset center hinge on the door.**

pivot arm cover on the pivot arm. (See photograph 8.)

With the cover removed, you can easily see the pivot arm. The arrow points to the large Allen screw that secures the arm to the floor check's pivot. (See photograph 9.) The two bolts to the left of the Allen screw hold the pivot arm to the bottom rail of the door.

In photograph 10, I am loosening the Allen screw that holds the arm to the pivot. In this case, the Allen screw was not frozen in the threads - like it usually is - and the arm came off the pivot with a minimal amount of effort. Occasionally, a pivot arm will be so badly corroded to the pivot that the arm has to be cut away from the pivot. (See photograph 11.) When that situation is encountered, the arm has to be removed without destroying the pivot; otherwise, NDC's pivot deactivator kit will not work. A good SawzAll (or a heavy-duty nut splitter will take care of the problem. The end result can be seen in photograph 12.

If the Allen screw will not release, before I bring out the big guns, I liberally douse the pivot and the Allen screw with Liquid Wrench (or a similar product. While the oil is doing its job, I go to the next step for taking the door down.

Photograph 13, is of the center, offset pivot hinge. I only have to remove the leaf that attaches to the doorjamb. Then I swing the lead away from the jamb and drop the leaf down from the bottom. Photograph 14, shows the leaf of the hinge removed from the jamb and the door leaf of the hinge.

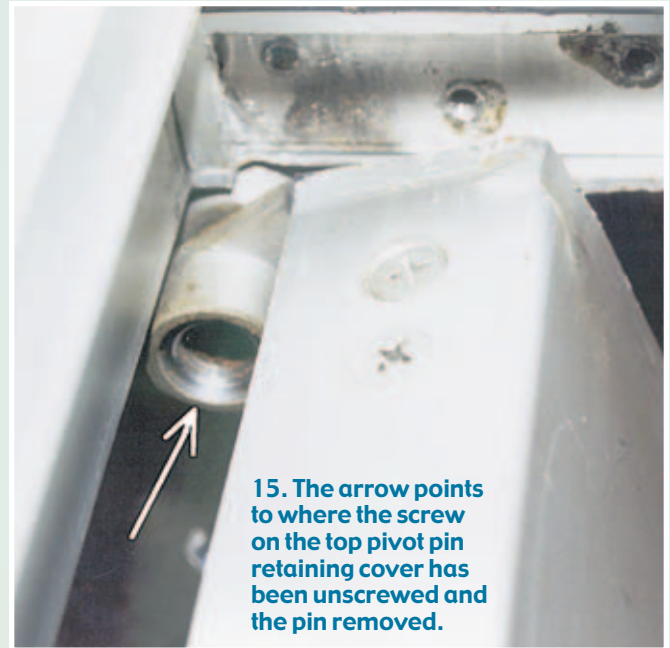
The next step is to remove the pin cover from under the top offset pivot hinge and drop the pin out. (See photograph 15.) This will allow the door to tilt forward and be lifted off of the floor check pivot at the bottom. That in turn allows you to perform any service work — up to and including, if you choose, replacing the floor check.

NOTE: Since I am working with the door in the open position, I use a Stanley Wonder Bar pushed under the latch side of the door to stabilize the door. (See photograph 16.) I do this before I remove the pin from the top offset pivot hinge.





14. The jamb side of the center pivot will swing away from and drop down



15. The arrow points to where the screw on the top pivot pin retaining cover has been unscrewed and the pin removed.



16. A Wonder Bar forced under the latch side of the door to stabilize the door while removing the pivots.

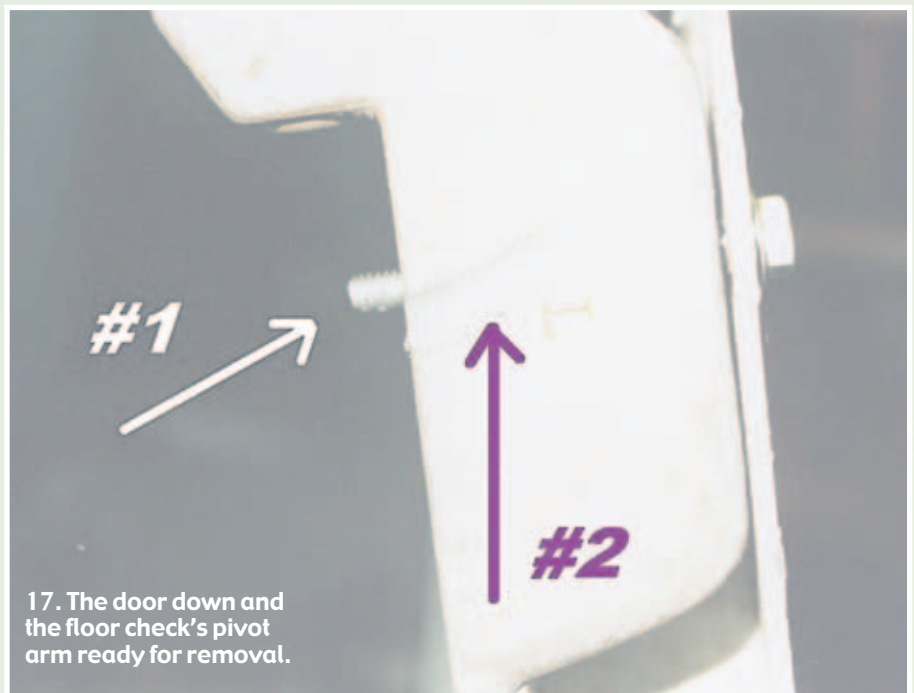
The Wonder Bar keeps the door from sagging and makes it easier for the one holding the door to maintain control over it. I used to do this type of retrofit by myself, and the Wonder Bar was my third hand and helper.

*Photograph 17*, shows the door off and the floor check's pivot arm exposed and ready for removal. This is where I received a surprise and found that Murphy was still alive and well.

This pivot arm (on a Kawneer door) was — as you saw earlier — surface mounted to the bottom of the door. When I removed it, I found that the bottom rail of the door was channeled. To accommodate the NDC 101, I had to fill the recess channel to within a 1/4" of the bottom edge of the bottom rail. In *photograph 18*, you can see how I used high-density polypropylene blocks as fillers or shims for this particular style door.

In *photograph 19*, you can see that I inserted the polypropylene blocks and placed NDC's #101 Pivot Arm in position. A couple of light taps with a hammer placed the arm and blocks where I needed them to be. In the photograph, my son is drilling the pilot holes for the TAPCON screws that will secure the blocks to the bottom rail of the door and give the pivot arm something to attach to.

The arrow in *photograph 20*, points out the line of TAPCON screws securing the polypropylene block and also allows you to see the screws that secure the NDC Pivot Arm to the bottom of the door.



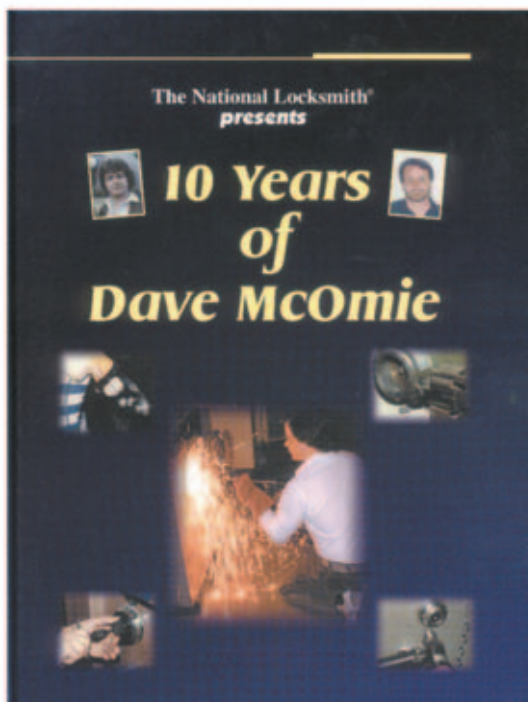
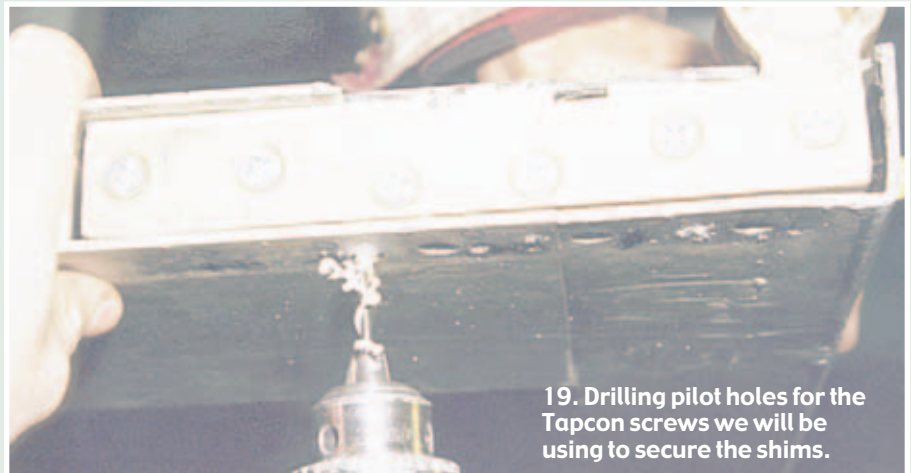
17. The door down and the floor check's pivot arm ready for removal.





Those screws are driven deep into the polypropylene blocks. The interesting thing about power driving a screw into polypropylene is, as the screw enters the material, it heats it, softens it just a little and as it cools, it shrinks around the screw and holds the screw very securely. The downside is that when you try to remove the screw, you have a devil of a time doing so.

With the pivot arm in place, I'm ready to re-install the door with the deactivator. The first step is to place the pivot sleeve over the floor check's pivot. Place the NDC bearing on top of that, and apply a generous gob of



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#DM - 10





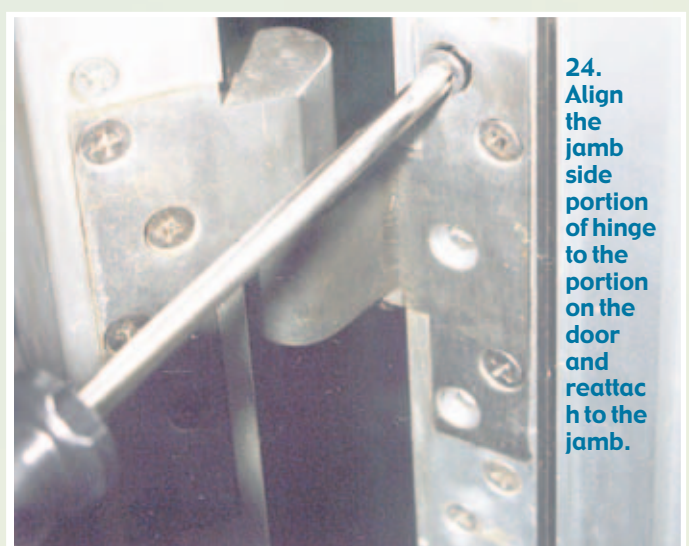
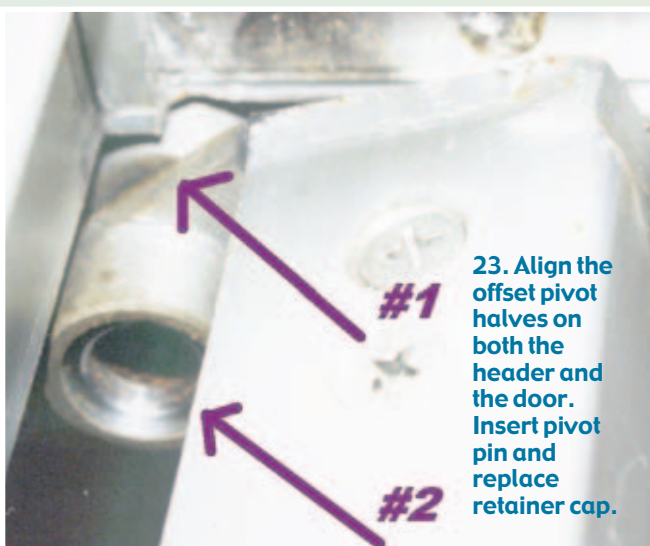
grease to the top of the bearing. (See photograph 21.)

After the pivot has the deactivator sleeve and bearing placed on it, it's time to slide the door with the deactivator arm, down over the pivot sleeve and bearing. (See photograph 22.) Tilt the door upwards and stabilize it with the Wonder Bar. I align the top pivot, insert the pivot pin and screw in the pin retainer cap. (See photograph 23.)

Finally, after checking the door for swing and free movement, it is time to re-install the center offset pivot hinge leaf. (See photograph 24.) Photograph 25, shows the NDC Pivot arm in place and functioning properly. Actually, you can't see how smoothly it functions, so you'll just have to take my word for it!

Finally, I installed a Sargent 351 surface mounted closer. This closer featured a parallel hold open arm assembly. (See photograph 26.) I did something about the door that was giving my customer a problem. Fix it! Photograph 27, shows the completed door from the outside.

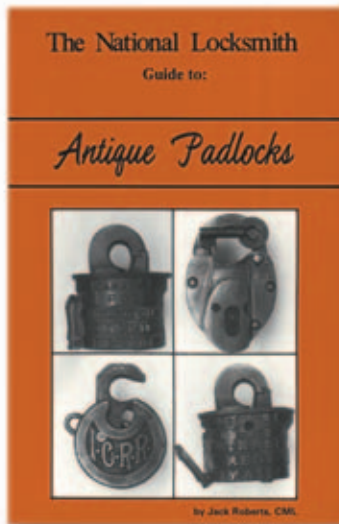
As I mention earlier, a single Rixson floor check can retail for about \$900, plus labor, service call, etc. Using NDC's #101 Deactivator Kit, plus my service call and labor, I did both doors for just under \$900. That's better than a 50% savings for





Continued from page 84

## Antique Padlocks



Finally there is a book to give you all the information you need about old interesting locks.

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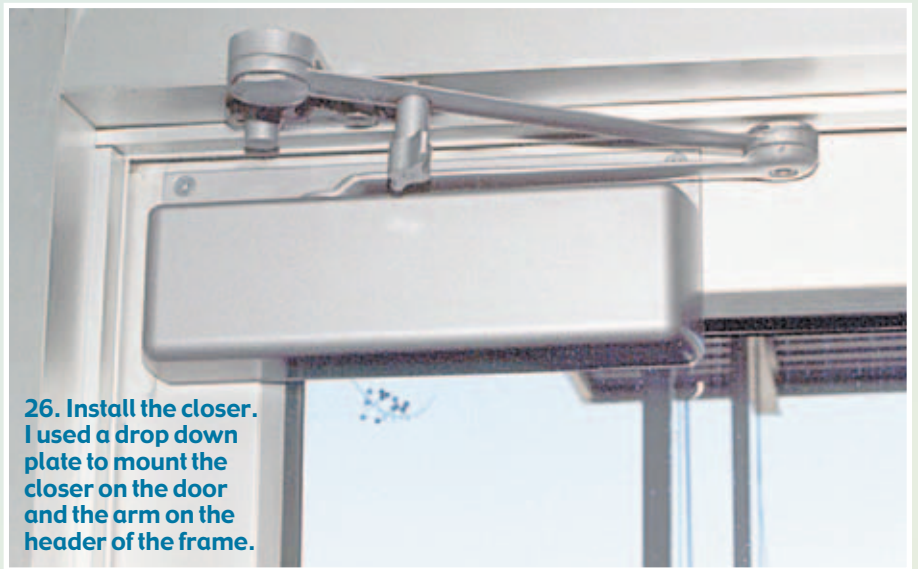


#PAD - 1

25. Visually check the alignment of the NDC Pivot Deactivator (on both doors) and check to make sure the doors swing with no rubbing or catching.



26. Install the closer. I used a drop down plate to mount the closer on the door and the arm on the header of the frame.



27. Both doors back in service with no fuss, little mess and a happy customer.

the customer who now has a door that will give them years of trouble-free service, no nasty oil leaks and no jerky door closings.

Here's the bottom line. For a little less than \$900 I deactivate two Rixson closers with NDC's Pivot Deactivator, installed two top grade surface mounted closers and gave the Hospital facility doors that operated properly for much less then one floor check would have cost. And I did it without the mess of prizing the old floor check out of the floor and having to set a new one in place with its attendant problems.

To find out how National Door Controls can help you with your next floor closer encounter, give Jeff or Robert a call at 1-800-231-0402. Tell 'em: "Jake, told me to call!" You'll be glad you did. Circle number 303 on Rapid Reply.

**TNL**



# Odds



by Sal  
Dulcamaro

# & Ends

*Every* year or so, I like to put together a somewhat hodgepodge article of unrelated locksmith material. There's no one grand theme that connects the various bits. It's just stuff that I couldn't place in articles with more specific themes, or afterthoughts of other articles.

It's probably been about 17 years since I first had a technical article published. I found an article on impressioning that I wrote for *The National Locksmith* way back in March, 1983. That was way back when Scott Anderson was still the editor. I wrote an occasional article here and there over the next 10-years. Then things got serious when I started writing for Reed's Security Reporter in January of 1993. I don't think there are more than four months, since then, that I haven't had a monthly article published somewhere. I'll sometimes read a posting online of someone looking for information on a lock, and have another posting indicate a magazine article that supplies the information. Much to my amusement, occasionally I'll check the magazine issue mentioned and realize it was one of my articles. It's kind of a weird feeling.

In all these years, I've written more than 175 articles. If I could compute all the hours of research it took to put them together, it would be a lot of years in solitary confinement. I've been debating with myself about going through this treasure chest of research with the possibility of putting together a number of theme oriented technical books. It would still be a lot of work, but I've already done a good chunk of the heavy research already. I'll obviously have to organize and update everything, but it will also give me the opportunity to provide more complete information in cases where editorial space was limited when the article originally ran. With a little encouragement I may write a few technical books over the next year or two.

## *Auto Lock Decoding Made Easy*

I am amazed at the rapid pace at which I see locksmiths getting entirely out of automotive locksmithing. I know that quite a few of the newer cars use transponder technology, and require special (and often expensive) electronic equipment



**1. A set of Chrysler Determinator decoder keys.**

for programming. The majority of cars on the road, however, have locks that can be handled without overly expensive tools and equipment. In fact, the majority of cars have disc tumbler locks that can be impressioned and picked. It is also possible to read the tumblers through the keyway. Now, disc tumbler reading is not a widely held skill among locksmiths, but there are a number of specialty tools available that effectively allow you to read the disc tumbler height without having to look into the keyway. The two types of which I am most familiar are EEZ

Readers and the Determinator. While I have written about both in the past, I have found both types effective when used individually. It is my experience, though, that I get better results when I use them together.

*Photograph 1*, shows a set of Chrysler (7-cut double-sided disc tumbler) Determinator decoder keys. They are designed to insert into a Chrysler disc tumbler lock, and trap when the key is withdrawn from the keyway against either a #3 or #4 depth tumbler. The 90-degree angle cut will grab any tumbler low enough to fall in the slot. A #1 or #2 tumbler is too high



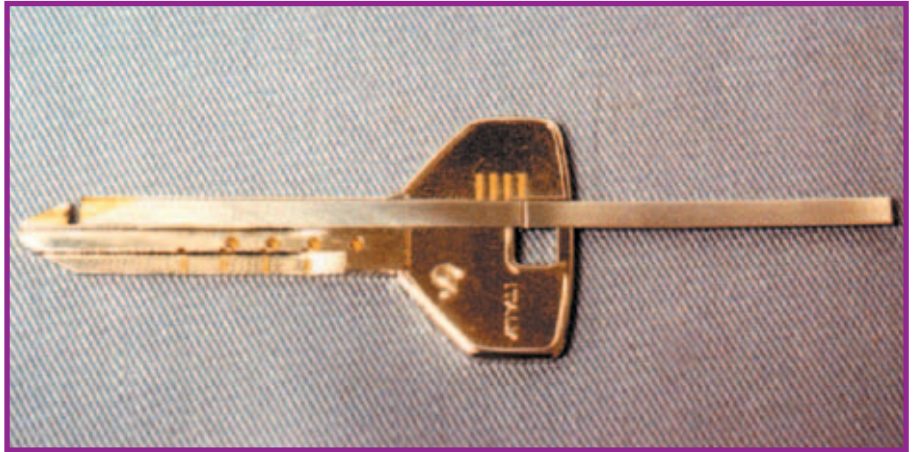
**Continued from page 96**

in the keyway and the key slot pulls right past them. Since the tumbler space positions are identified on the key, it is possible to quickly identify which tumbler positions hold either a #1 or #2 size tumbler (which is identified as "A") and which positions are either a #3 or #4 size (identified by "B"). After identifying each cut position as "A" or "B", is to cut a key using half depths. An "A" is cut as 1-1/2, and a "B" is cut as 3-1/2. This is essentially the principle used with tryout keys. They are keys that turn, but not necessarily as smooth as using full cuts.

With the less than tight tolerances, it is possible to turn four depth increments into two. A 1-1/2 depth is 1/2 lower than 1 but 1/2 higher than 2. A 3-1/2 depth is 1/2 lower than 3, but 1/2 higher than 4. The two-depth key that turns gives clues as to the true identity of the "A" or "B" cut depth. If there is no impression mark, the tumbler was just above the cut and it should be the shallower of two possible choices. An "A" becomes 1 and a "B" becomes 3. If there is an impression mark, the tumbler should have dropped a 1/2 depth deeper. That suggests an "A" to be 2 and a "B" to be 4. A second key is cut to full depths and presumably should turn smoothly. A possible disadvantage to this method is that two separate keys are cut to determine the actual depths, with the first one effectively wasted. The speed of the process probably justifies it.

A 7-cut Chrysler EEZ Reader is shown in *photograph 2*. It works on a slightly different principle. A slot near the tip of the prepared key is designed to trap a tumbler. A spring steel slide is pushed inward until its angled tip makes contact with the bottom surface of the trapped tumbler. A depth scale on the head (bow) of the key identifies the tumbler height to indicate the proper key cut depth. The slide also disengages the trapped tumblers so the tool can be used to trap and decode all the other tumblers. This method allows you to determine full depths from the start and make a key on that basis. The possible disadvantage to this process is that you need to have a light touch to know that you have contacted the tumbler for accurate decoding.

When I use the two different tools together, I first use the Determinator and break down all the tumbler



**2. A 7-cut Chrysler EEZ Reader.**

positions into either "A" or "B" designations. Then I use the EEZ Reader and define an "A" as either 1 or 2, and a "B" as either 3 or 4. Doing this helps in two ways. First, if I push too hard on the EEZ Reader and mistake a #4 tumbler as a #1 tumbler, the Determinator will tell me it is a "B" which immediately eliminates either a #1 or a #2 tumbler.

The second way a two-tool process can help has to do with misreading an EEZ Reader. One time I was using a Ford EEZ Reader (all by itself) and it was working properly and I was feeling the tumbler depth positions correctly. For whatever reason, I was reading the scale backwards and I was writing down the depths backwards. So deep cuts would become shallow cuts and vice versa. It was nearly an hour of re-decoding and cutting keys

before I realized my error. When I reversed everything, I made the correct key in just a few minutes. If I had a Determinator with me, I would have seen the numbers didn't match, and I would have probably corrected my reading of the scale immediately.

### *Lubricants*

For years and years I would use WD-40 to free up sticky locks. For many of those same years, I would follow a running debate in the letters to the editor columns of the various technical journals about the purpose and use of WD-40. I know that WD stands for "water displacement," and it was not originally intended as a lubricant, but it seemed to get the job done. Plus, I heard all those peculiar claims as to what people did with WD-40. Among the more bizarre sounding



**3. WD-40 and Tri-Flow.**





**Continued from page 98**

uses was for relief from arthritis. It was a bit odd a few years ago when my father-in-law mentioned that someone he knew indicated good results using WD-40 for arthritis. I have no idea how it could affect arthritis pain, but it is an amusing story.

Maybe two years ago or so, I finally ventured out to try a “true” lubricant when I purchased a can of Tri-Flow, which uses Teflon as a lubricating agent. It is extremely effective. I have found that the lubricating action lasts a long time. Plus it dries very quickly. I have known WD-40 to leave a liquid residue on a key a day or more after applying it into the lock. I have seen Tri-Flow dry in a matter of a few minutes. The dirt and debris that interferes with the operation of the lock is cleaned out and a layer of Teflon remains.

The only minor complaint I have is the size and shape of the smaller size can of Tri-Flow. *Photograph 3*, shows a can of WD-40 and one of Tri-Flow. The small and narrow can of WD-40 at the left is small enough to fit in small little spaces in various tool cases that I use. The smallest size spray can of Tri-Flow is a lot wider, unless there is a

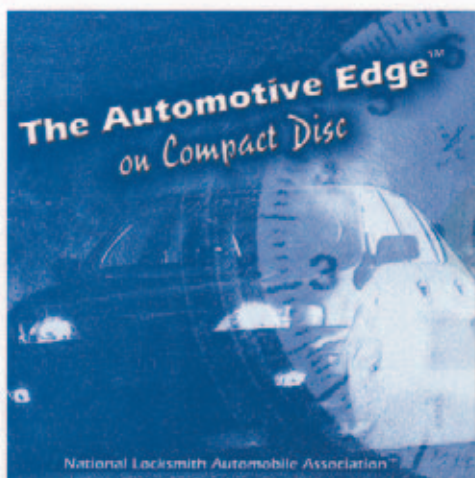


**4. The nozzle stores conveniently in the gap in the tape.**

smaller size spray can available other than the sizes shown in my locksmith supplier catalogs.

I don't know if it is just luck, but I have had good fortune holding onto

the narrow extension spray nozzle, which stores conveniently in the gap in the tape holding it to the can, as in *photograph 4*. I have been able to slide the nozzle in and out of the tape



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opening many dozens of times, and the gap hasn't closed up or ripped. In the past, I would typically hold the nozzle onto the can with a rubber band. But every time, the rubber band eventually gums up and/or breaks. I don't know how much longer the tape will hold up, but I always know where my spray nozzle extension is stored these days.

### *The Hinge Doctor*

There is an interesting little tool on the market that helps correct door sagging in certain instances. Shown in photograph 5, the Hinge Doctor will help to straighten out slightly bent hinges. The tool slides over the exposed knuckles of a 4-1/2 inch by 4-1/2 inch commercial hinge, and by slightly pulling open the door in resistance to the tool, the hinge is slightly bent so the leaves of the hinge will close tighter together. It will typically be used on a top hinge, where gravity causes the most stress. It will not help broken hinges or where attaching welds are broken and the broken welds are the cause of sagging. It is not recommended for cast hinges, as they may crack when trying to bend the leaves. Think twice about using it where the hinges are



### **5. The Hinge Doctor.**

attached to wooden doors and/or frames. The force needed to bend the hinge leaf (or plate) might be too much to avoid pulling the hinge screws out of the wooden door or frame.

### *Emergency Plug Followers*

I suppose most of us have found ourselves without the proper plug follower at some time or another. I know I have on occasions used pen caps or rolled pieces of cardboard to create the correct diameter for an unusual size plug. They typically hold up for a short time. I have found a

precise and convenient source of odd sized plug followers: drill bits. Among my various drill bit assortments, I have one rather large set that is made up of fractional, numbered and lettered drill bit sizes. There is such a wide range of available sizes that I can't imagine a diameter I couldn't closely approximate. The only downside is the sharp fluted end of the bit. I have been known to wrap a layer or two of masking tape over the sharp end to avoid cutting my fingers when using my "emergency" plug followers.

*For more information about The Determinator, write to: The Car Openers, Inc., P.O. Box 895, Ocoee, FL 34761. Phone: 800/561-0443. EEZ Readers are available from H. E. Mitchell, on the internet at: [www.plsgroup.com](http://www.plsgroup.com), or by phone: 800/626-5625. Circle 305 on Rapid Reply.*

*You should be able to find the names and numbers of distributors in the PLS Group, who sell EEZ Readers. Circle 306 on Rapid Reply.*

*For the Hinge Doctor, contact: Gold Key & Lock. Phone: 800/924-5397. Circle 307 on Rapid Reply. **TNL***



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# BEGINNER'S CORNER

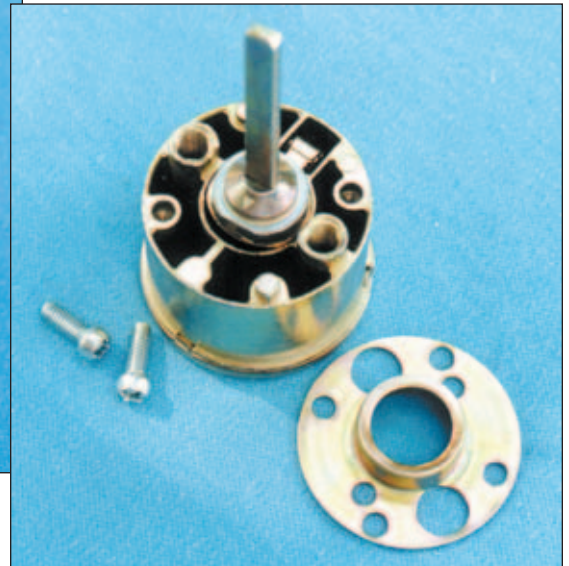
## Harloc #920 Single Cylinder Deadbolt.



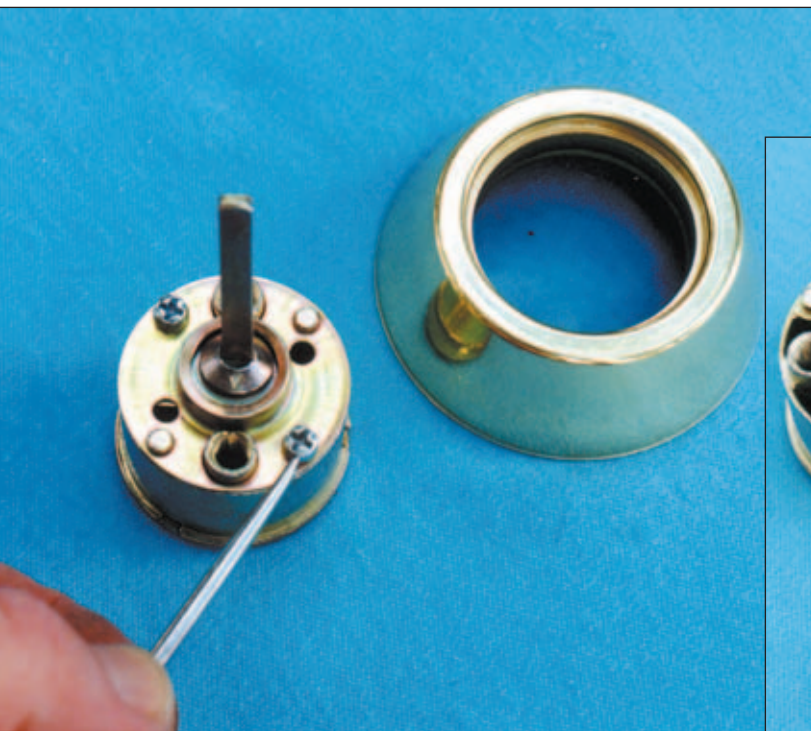
by  
**Jim  
Langston**



**1.** The Harloc 920 deadbolt seen in is widely used in residential applications.



**3.** With the back plate removed, you can lift off the tailpiece and then remove the lock cylinder.



**2.** To rekey this lock, you must remove two Philips screws from the back of the cylinder housing which secure the cover plate.

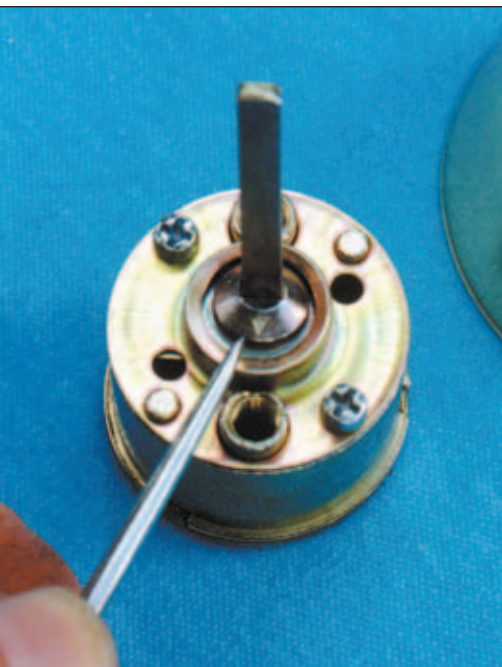


**4.** Once the cylinder is removed, remove the horseshoe clip from the back of the lock.





5. Remove the cylinder and plug and rekey as usual. When you finish rekeying the lock, replace the horseshoe clip. Now place the cylinder back in the housing and replace the tailpiece.



6. On the tailpiece, there is a small arrow at the bottom. The arrow should point to the bottom of the lock. Now replace the back cover and two Philips screws. You are now finished rekeying this lock.

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# Professional Pricing Policies & Procedures



by  
**Dale W. Libby, CMS**

**I** am writing this article on Professional Pricing and quoting prices to make my job easier. In the

past, I have quoted prices for jobs in a haphazard manner and have cheated myself in the process. In ancient days, my pricing strategy was rather flexible and depended on how I felt and who you (the customer) were. A lot of the pricing guidelines depended on if I had done work for you before and how you paid. It's not the best method of price structuring.

The core of my random quotation of price depended on the how much can the market bear? Some people got real deals, and others did not. The worst thing a customer could say to me was "Wow, I expected to pay twice as much for your service, others quoted me much more!" With a standard pricing policy, I no longer hear that. Even if I do, I am satisfied with my price quoted for services rendered.

A lot of thought went into my pricing procedures and I will share some of my beliefs and feelings that went into my Millennium Prices for safecracking and combination changing. An overall view of pricing will follow with specific prices for MY services included.

First, I am aghast at "average price lists" that magazines publish. They usually never publish safe opening prices that make sense to me. Average price lists mean that every response is thrown into a bin, all figures added up, and the average is

taken by dividing the number of participants with the totals for each category. This really tells us nothing. For the prices are not broken down into demographic areas. Simply, the lists should show what a locksmith is charging if he or she lives in a town with under 50,000 population, over 100,000, over 500,000, and over 1,000,000 population or immediate working areas.

The prices should also reflect the area's standard of living, age of residents, location and make up of factory and shopping mall areas, just to mention a few. If, in California, as I understand it, there are locksmiths and safecrackers on almost every block of the large metropolitan cities, then prices would vary because of the dense population of professional service people. If the competition is fierce, then prices will go down. If you are the only professional in the midst of seven communities, then you can charge more, for you are the only safecracker in town.

The price for opening a safe in Seattle, Elgin, Chicago, New York City, Miami, and Iowa will all be different. This is both due to the make-up of the metropolitan areas as well as population density and most importantly, the skill of the Safecracker or professional safe technician. In many instances, beginners in both locksmithing and safecracking tend to charge less than that of established professionals. They must feel that as beginners they should not charge as much as someone who has been doing the work for many years.

If you look at it from the customer's standpoint, they want a lock rekeyed. They will find the cheapest and take that price. They may not care that you have been in the business for 1 year or

20. They just want the lock rekeyed, period. Price is the determined factor. With safecracking, both time and skill determine the price of the professional. This can also work against the proficient safeman.

Sometimes a truly good safe technician will be able to open a safe in an hour, where a beginner may take many hours to accomplish the same feat. Who should get paid more? If both people do the same job, then they should get paid the same, right? Well I believe the professional who has many thousands of dollars tied up in tools, tricks, and education, should get paid more. He knows more and can usually get the job done quickly and efficiently. He should charge more, but often does not. This is why I have gone to a standard pricing list. It makes it much easier to quote prices.

Before quoting prices, I will say that psychology has something to do with how the potential customer sees your business. If you are up front with him, and show concern for his problems, then many times you will get the job, even if you are not the cheapest. Here are a couple of instances culled and paraphrased from my customer calls, with my answers:

**Customer:** How much to open my Diebold Jeweler's Safe?

**Me:** *A guesstimate would be between \$300.00 to \$600.00.*

**Customer:** Not good enough. I want a flat rate!

**Me:** *Fine. The flat rate price is \$600.00*

**Customer:** No, you don't understand. Can't you do any better?

**Me:** *Sure I can, the price is now \$650.00.*

The proceeding is not to be taken as a joke. If someone asks if you can do better, that means better for me, and that means more money for me, not less. If they want a better price,

**Continued on page 106**



Continued from page 104

there are ways to achieve that without lowering your opening price.

Again, before going into specific numbers, there is a lot you should explain to the customer to cover all your bases. A safe opening consists of the following items:

1. Cost of the safe or chest opening (Fixed).
2. Trip Charge - time to the job and back or mileage.
3. Drill Bit Attrition (DBA).
4. Aggravation Factor - (Nominal).
5. Parts - Including New Lock.
6. Labor to install new lock and set combination.
7. Hourly rate or waiting time on site.

Let us discuss these charges in a little more detail. There are times you can be flexible and times you cannot. The secret is to make sure the customer thinks he is getting a great deal. If he is happy, you will be happy too.

1. The cost of the safe opening should be determined in advance. That price should be set in stone. All the other six additional charge figures can be used or not, depending on the specific circumstance. I determine the cost of the safe or money chest opening in the following manner: I only have five charges. I call them "Basic Safe Opening" charges or BSO's. Here is my list.

BSO "1" - \$100.00 - Sentry or Bumil type opening.

BSO "2" - \$195.00 - Majority of Fire and Light duty safes - floor safes.

BSO "3" - \$295.00 - Safes with decent hardplate.

BSO "4" - \$395.00 - Double Door Safes and Money Chests (easy).

BSO "5" - \$595.00 - Hard Stuff, GSA containers, etc.

Notice that the BSO 5 is \$595.00, not \$495.00. I like this jump in price because it covers most safes and chests that will give me a hard time. I determine the level of the safe, but if I make a mistake quoting the price, the other sections of pricing will pull me through. The BSO charges do not include any repair to the safe, unless it is very minor. I may tighten a dial ring or constrict the spline key, or maybe even fill the hole I drilled, but that is it. Minor repairs mean minor repairs. Anything else is charged for and listed specifically.

2. Trip charge: This is not a service call price. The customer will expect service to be included. It may or may not be used. There is enough leeway in most BSO charges to cover this. Locally, in Elgin, depending on circumstance, I may or may not charge a trip charge. For the Sentry or Bumil opening, I usually just charge a flat rate of \$100.00, manipulation or drill. This includes opening the safe and giving the customer the existing combination. It does not include changing the combination or repair, except minor dial ring tightening.

On safes and chests away from Elgin, I charge accordingly by mileage or by time on the road (Rush Hour). If a second trip charge is needed for repairs, I may or may not charge it, depending on circumstances and the attitude of the customers.

3. Drill Bit Attrition or DBA: This add-on price is not usually used except in extreme cases of drill bit usage and loss. If I have to open a Knight safe through the front, you better believe I will charge for the carbide drill bits or the diamond hole saws. DBA includes all tools and materials that are lost, destroyed, or burnt up due to this specific safe opening procedure. List all parts with one figure to cover all.

4. Aggravation Factor (Nominal): I do not list specifics for this charge, just an amount. Charges are made in this column when the job is at a Mall and you must park blocks away and back entrances are not available. This will also include multiple trips back and forth between the job site and your work vehicle. I use this figure when doing locksmithing also. Usually they do not ask, but if they do, I state clearly that the figure is NOMINAL. If they want more details, I give it to them. Anything that aggravates me, I charge for, so don't aggravate me by asking 'stupid questions' or offering to get me the dynamite. One can be really creative with this number.

5. Parts and Labor: go together. I do not sell combination locks unless I install them in the safe myself. I sell no parts that I do not install. I do not sell change keys to anyone. If they want the combination changed, then I will have to do it. On a new install, I will not charge them to change the combination initially. That is included in the labor to install the lock charge.

6. Hourly rate or time waiting: This is another charge that I do not invoke to often unless I am made to wait on site for special people to show up. This charge is used mostly in banking institutions, where I am forced to wait until Ms. Jones is out of a meeting, or Mr. Smith is still on the phone. This use to make me mad, but now that I charge (and charge up to \$2.50/min), I just sit back and wait. When I explain the charges on the invoice to the customer, he is upset, but he understands it. The next time I do work for that same banking group, there is minimal waiting time, usually. If I am really on a bad safe opening and it takes many hours, this is the chance to add on your hourly rate. It will cover most incidentals.

Most safe jobs I get called for I go and give a direct estimate. I will quote them the total price, including everything. I take my invoice and write all charges down in advance so there is no mistake. I make sure there is enough cushion in the price to cover most eventualities. On safes or money chests that might cause some problems, I state the price, but amend my quote by saying that if I run into problems, there will be additional charges. I rarely have set prices, except on the easy safes to open, the Sentry, the Bumil, the Brinks, etc.

It may seem like nickel and diming the customer to death, but a complex invoice looks better to some rather than just a final figure. The more you do safe work, the better you will have the knowledge to charge for your services, your tools and your knowledge.

Think about all the above factors and do not shortchange yourself. Sometimes you have to be flexible to get the job, and try not to be too rigid that you lose a lot of work. Another area that is important to the safeman is to set standards for payment. Now that we have an opened safe, we must get paid for it. Most of my work is COD. Sometimes I do guarantee work for the factory that made the safe or for National Service Providers. (NSP's). I state all conditions for payment in advance. I will talk about that at another time with a form for payment when dealing with NSP's.

Open, charge enough for your work, and prosper! **TNL**



# The WIGGLE Side

## Losing Your Temper



by  
**Sara  
Probasco**

Don had just wheeled into the Subway parking lot, planning to pick up a sandwich for his lunch, when a call came in on his mobile phone from AAA Auto Club. They had a locked out customer in Hondo - approximately forty-five miles away. The dispatcher claimed to have called Don twice about this job, but Don knew he hadn't talked to them previously, and there was no indication on his phone of any missed calls, so he shrugged it off. Picking up a sandwich and a drink "to go," he headed east, to Hondo.

As he approached the job site, he recognized the tow truck of a salvage business from Uvalde, our home town. It was parked beside the locked vehicle. Ned had an opening tool down in the passenger door, trying to unlock it.

This was not the first time something like this had happened. Several years ago, we went through a frustrating series of incidents when a mobile locksmith in the area would pick up information on the police band radio. When the police dispatcher was instructed to call us, he would jump into his vehicle and beat us to the site.

Then there was a period of time when one of the local motels would call police, tow service, mobile locksmith and us, figuring the first one there would get the job. When we presented a trip charge a couple of times - even when we weren't the ones who opened the vehicle - they stopped doing that.

Then there was one time a road service company somehow had three different dispatchers calling about the same job - a lost-key situation in a remote area about thirty miles from us. From the time the customer first contacted us and we gave him the toll-free number to call, it was about three hours before we were finally dispatched to the job site. Then two of dispatchers (same road service company) called us within about thirty minutes with different purchase order

numbers. In the meantime, a third dispatcher had contacted a tow service nearly seventy miles away. He was at the job site, opening the vehicle when Don arrived. However, he had not been advised that the customer's key was lost, rather than inside the vehicle and he had no knowledge how to make new keys from scratch.

This Hondo job was different. We'd never run into a road service company deliberately calling more than one vendor for a job. Don decided to ask some questions.

"How'd you pick up this call?" he asked casually.

"AAA called me a couple hours back. I was working on another job, and just got here a few minutes ago." Ned paused and looked up. "What about you?"

"They called me, too. I guess they issued you a call number?"

"Yeah. I wrote it here on the ticket." He showed his invoice to Don.

Don looked at that ticket, then looked at his own work order. The call numbers were identical. "Well, this is a first," he said. "The dispatcher kept insisting she'd called me twice. Apparently, she got her phone numbers mixed up and dispatched us both, by mistake."

"Want to flip a coin for it?"

"Tell you what," Don said. "You go ahead, since you've already started working on it. If you get in, I'll turn in a 'Gone On Arrival.' If you don't get in, I'll take a crack at it, and you claim the GOA."

"Suits me," Ned replied.

Don leaned back against the vehicle to watch.

Deciding to abandon the passenger door, Ned walked around to the driver's side and inserted his tool in the door.

While Ned poked and twisted, pulled and pried, Don quietly stepped to the passenger door, wedged it,

slipped his tool down inside and unlocked the door. Then he removed the tool and wedge and leaned back to wait.

Ned pulled his tool out, straightened it, and plunged in again, to no avail.

"You want to try?" he asked Don. "I can't get this to budge."

Don smiled mischievously. "Door's open," he said as he lifted the handle and swung open the passenger door with a flourish.

Ned's mouth dropped open. "Smart alec," he muttered. "How'd you do that?"

"Magic!" Don replied, grinning.

"No, really, I couldn't even begin to make it move. What am I doing wrong?"

Don showed Ned the tool he had used to get the door open. It was a long Z-shaped rod with a hook on the end - not unlike the tool Ned had been using, but a different length.

"I've got two like that," Ned said. "The one I was using is a bit longer, and I have one that's shorter."

"Well, you see, that's the problem," Don said. "The shorter one won't reach far enough, and the longer one over-reaches. You really should invest in the middle-length tool. It'll save you a lot of grief. Besides, it'll save money, in the long run, even though they are kind of expensive."

Ned made a couple of notes in his little pocket notebook. "I'm not about to invest in another tool. I've never been able to get this longer one to open much of anything, anyhow. I'll just cut a piece out of the middle of it and re-weld it together, the length of the one you have there. That ought to work."

"I don't know that I'd do that, Ned. You may run into a problem with...."

"I know how to cut and weld. It'll be a snap, and it won't cost me a thing, except for a little time."



"But, the heat may...."

"Look, I know how to do it, and I really appreciate your giving me the idea. Thanks."

"Sure. Glad to help," Don replied.

When Don told me of the event, later, I expressed surprise that Ned didn't get miffed over Don's opening the door so easily.

"Old Ned doesn't get mad over much. But he may over this, yet."

"How's that?"

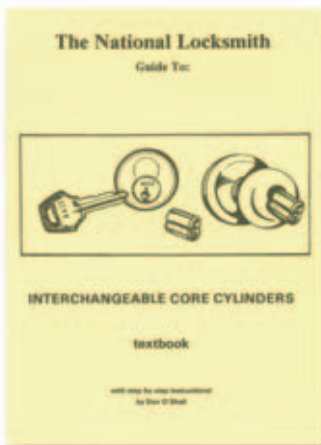
"He wouldn't let me tell him anything about cutting that rod down to size. When he cuts it and re-welds the two ends together, the heat will most likely harden the metal, and it won't be flexible enough to work properly, any more."

"Oh, my! What happens then?"

"Well, I guess you could say, that's when they'll both lose their temper."

TNL

## Interchangeable Core Cylinders



CLICK HERE TO LEARN MORE



#ICB - 1

# GM Steering Column Course



Comes complete with take-home test so you can become certified on GM steering column service!

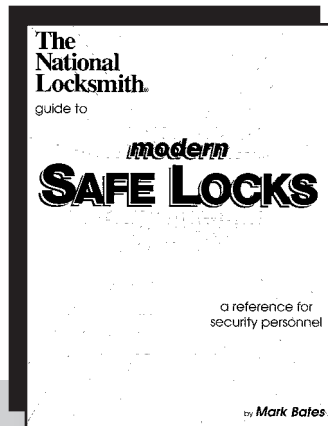
Authoritative training on every domestic GM column from 1967 to 1995.

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#GM - 2





*This material was excerpted from the Mark Bates book titled Modern Safe Locks. The book covers combination operating and changing procedures for virtually every combination lock both mechanical and electronic, that you will encounter on a daily basis. Modern Safe Locks is available for purchase through The National Locksmith.*

## Rench

<b>MODEL:</b>	<b>6001</b> (Current Production)
<b>DESCRIPTION:</b>	Three wheel, key changeable delay action timelock. Regular change.
<b>RATINGS:</b>	None
<b>FACTORY COMBINATION:</b>	Unknown
<b>OPENING PROCEDURES:</b>	<b>WHEN SET TO A 3 NUMBER COMBINATION:</b> <b>a.</b> 4XL to 10 <b>b.</b> 3XR to 20 <b>c.</b> 2XL to 30 <b>d.</b> 1XR to stop (12) <b>e.</b> Wait for delay period to expire. <b>f.</b> Turn dial right to stop (02).
<b>TO LOCK:</b>	Turn dial left 4 times.
<b>FORBIDDEN ZONE:</b>	5 to 25
<b>CHANGING PROCEDURE:</b>	<b>WITH THE SAFE DOOR OPEN...</b> <b>a.</b> Dial the existing combination to the changing index (steps <i>a</i> through <i>c</i> under "Opening Procedures"). <b>b.</b> Insert change key and turn it left 1/4 turn. <b>c.</b> Dial new combination to the changing index (steps <i>a</i> through <i>c</i> under "Opening Procedures").



## Rench

- d.* Turn change key right 1/4 turn and remove it.
- e.* Test combination at opening index (steps *a* through *f* under Opening Procedures").

### CHANGING DELAY PERIOD:

***THE DELAY PERIOD MAY BE 5 TO 45  
MINUTES IN 5 MINUTE INCREMENTS.***

- a.* With the safe door open, turn the dial left to extend the bolt.
- b.* Remove the two slotted screws on the back of the time delay case.
- c.* Allow the movements to come to a complete stop.
- d.* Move the time limiting screw from its present marked location to the desired time delay location.
- e.* Re-install the movement case and test time delay (steps *a* through *f* under "Opening Procedures").

### TOOLS NEEDED:

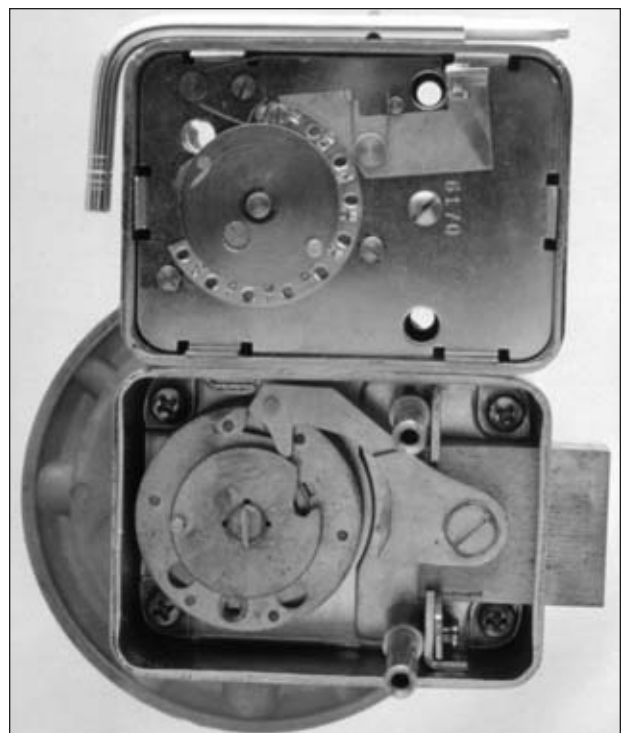
Rench change key. Small anti-magnetic slotted screwdriver.

### NOTES:

Constructed with economy in mind.



RENCH 6100



# TECHNITIPS

## YEAR-END PRIZES



### **Grand Prize**

Silca Bravo Duplicator



### **1st Prize**

HPC's 1200PCH  
Punch Machine



### **2nd Prize**

Mas Hamilton's  
PowerLever 2000



### **3rd Prize**

Curtis 2200 Duplicator



### **4th Prize**

SDC Magnetic Lock,  
Keypad and Exit Switch



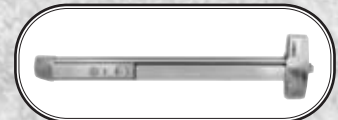
### **5th Prize**

Securitron 12-Volt Unlatch Plug in  
Trans & Touchpad Retail Value \$650



### **6th Prize**

LaGard "SmartGard"



### **7th Prize**

Detex Advantex



### **8th Prize**

Arrow 400 Series Alarmed  
Exit Device & S-75 Mounting  
Plate Kit for Narrow Stile  
Aluminum Doors



### **9th Prize**

\$500 in BWD Products



### **10th Prize**

\$500 in ASP Auto Locks



### **11th Prize**

\$500 in Strattec Auto Products



### **12th Prize**

Tech-Train "Jiffy Jack"



### **13th Prize**

Sargent & Greenleaf 6120  
Electronic Safe Lock



### **14th Prize**

High Tech Tools  
2000 Pro Set



### **15th Prize**

Slide Lock's Master "Z" Tool Set





**16th Prize**

ESP Products Sampler



**17th Prize**

Major Manufacturing's  
HIT-111 Drill Guide



**18th Prize**

Abus Padlock's Marine  
Padlock Display (\$120 Retail)



**19th Prize**

Mark Bates Associates  
Falle Pick Set



**20th Prize**

Baxter JV-1 & JV-5  
Code Books



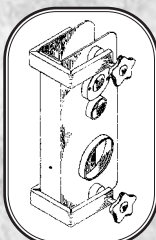
**21st Prize**

Sieveking Products  
Squeeze Play



**22nd Prize**

Rodann's RV500 Wireless  
Door Annunciator System



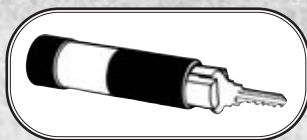
**23rd Prize**

A-1 Security Manufacturing  
Installation Jig



**24th Prize**

Keedex Sampler



**25th Prize**

Framon  
Impressioning  
Handle



**26th Prize**

Gator Tool Multi-Purpose  
Facecap Tool

## These Prizes Awarded Each Month!

- BWD Automotive Ford or GM KwikIt
- Wedgeco™ Key Extractor Kit
- Strattec Racing Jacket
- HPC Air Wedge™
- Sargent And Greenleaf 4400 Series Safe Deposit Box Lock
- A-1 Security Products
- ILCO Key Blanks (100 Blanks)
- Keedex "SPIN OUT" Screwdriver
- Tech Train Training Video
- Sieveking Products Gm E-Z Wheel Puller
- Major Manufacturing Products
- Slide Lock's "Z" Tool Opening Set
- The Sieveking Auto Key Guide
- Jet Key Blanks (100 Blanks)
- High Tech Tools
- LaGard Combo Guard

### Send in your tips, and win!

#### How To Enter

Send a tip on how to do any aspect of locksmithing. Certainly, you have a favorite way of doing something that you would like to share with other locksmiths. Write your tip down and send it to:

Jake Jakubowski, Technitips Editor,  
The National Locksmith  
1533 Burgundy Parkway  
Streamwood, IL 60107-1861

Or send your tips via  
E-mail to: Natlock@aol.com

#### Rules & Regulations

Each tip submitted must include your full name, street address (no P.O. Box numbers), city, state, zip code, phone number, fax number or e-mail address.

#### Every Tip Published Wins

If your tip is published you will win one of the monthly prizes listed. At the end of the year, we choose winners from all the monthly tips published, that will be awarded one of the fabulous year end prizes. All you have to do to win is enter.

Prizes are arranged according to suggested retail price value.

Tips Start  
on Next Page





**BWD KWIKIT WINNER:  
GM 6-Cut  
Progression Chart**

Having been frustrated trying to generate a GM 6-cut door/trunk key from the glove box lock, with a progression chart that will not work, I came up with what I call a "Universal Half-cut Progression System."

I find that if the locks have not been changed, this system works for me 100% of the time. I use a maximum of three keys to come up with a working key. To speed the process, I work with three keys at a time. I mark the keys #1, #2, and #3 by using a file to mark the keys to differentiate between the three keys.

With this system, I ignore the odd/even rules for GM, but I do keep the cuts within the MACS range. If you forget to observe MACS rules with this half-cut system (like putting a 4-1/2 next to a 1-1/2 cut) you may have the unpleasant experience of having a key get trapped in a cylinder requiring you to disassemble the lock to remove the key.

<u>KEY #1</u>	<u>KEY #2</u>	<u>KEY #3</u>
1-1/2 - 1-1/2	1-1/2 - 2-1/2	2-1/2 - 1-1/2
2-1/2 - 2-1/2	1-1/2 - 3-1/2	3-1/2 - 1-1/2
3-1/2 - 3-1/2	2-1/2 - 3-1/2	3-1/2 - 2-1/2
4-1/2 - 4-1/2	2-1/2 - 4-1/2	4-1/2 - 2-1/2
	3-1/2 - 4-1/2	4-1/2 - 3-1/2

If after generating a working key, the key seems to stick or bind, use your impressioning skills to "dress" the key. The key will mark extremely well, at this point.

*David Craig  
Illinois*

**Editor's Note:** Dave, this is a good tip. However, I do have a minor concern. By using half-cuts (and that's what the old GM try out key sets were based on) are you, as a result of "forcing" a key that is half a depth to shallow, damaging the wafer and setting the customer up for a lock failure down the road? On the other hand, GM six cuts are becoming old enough that any you run across probably have enough wear to allow for the half-cut differential you show in your chart. Regardless, it is a means to an end and sometimes that's the best we can hope for!



**WEDGEKO KEY  
EXTRACTOR WINNER:  
Master Gun Lock Bypass  
and Warning**

A customer called saying that he lost the keys for 14

## A Few Words From Jake...

This month, I begin my eighth year as the Technical Editor for The National Locksmith! Back when Tom Seroogy was the managing editor, he called me about taking the job editing the Technitips column. I agreed to do it only on the proviso that I could quit anytime I felt that the job was too much for me, or I felt unable to provide a viable column each month. I've got to admit to each of you, that I didn't think I would be doing this column for more than a couple of months!

What started out as a column with about nine tips a month and eight or ten year-end prizes, has grown to sixteen tips a month and nearly thirty year-end prizes! Talking about being in the right place at the right time!

The prize contributors that have joined our prize pool and the tipsters that have sent in the tips that I print each month have really made me look good!

The fascinating thing about this job is what I have learned from you. I have learned from the novice and the experienced locksmith as well. Like many of you, I have carried a lot away from this column that has helped me in my day-to-day locksmithing. I'm sure other readers have done the same.

Now for a little shameless commercialism. In case you haven't heard, The National Locksmith just published my first book, *The Fifteen-Minute Safe Opening Technique*. That book is chock full of tips, tricks and ideas on opening a whole bunch of round-head, in-floor safes. In that book I show five different ways to open a Major, Three ways to open a Star and four ways to open a LaGard. The point? If you do safe work, or are thinking about doing safe work, this is a book you are going to want in your library.

See y'all next month.



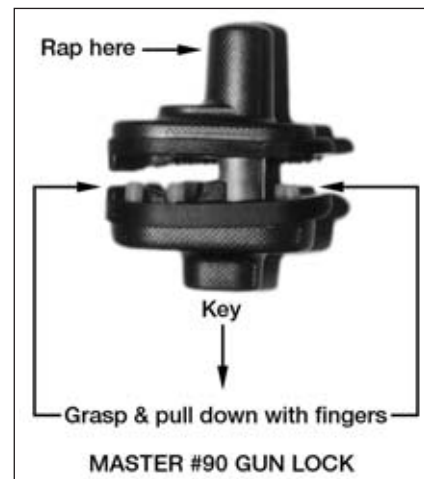
**by Jake  
Jakubowski**

Master #90 Gun Locks on 14 different guns, all keyed different, and wanted them opened ASAP.

These newer locks are black in comparison to the older style which are dull bronze in color, have no code on them, and the key can only be turned one way. While picking the first lock, the customer asked if they could be cut off to go quicker. Since he had no hope of finding the keys, I told him that they could be drilled opened in minutes.

While drilling the second lock, a piece of the drill bit broke inside of the cylinder. I turned the lock up side down, wrapped a rag around the stock of the gun close to the lock and began rapping on the lock with the handle of a medium sized screwdriver. (See *photograph 1.*) To my amazement, the Master # 90 gun lock opened!

With the following technique, I had the remaining 12 locks opened in under 3-minutes! First wrap the gun with a rag around the area where the lock is to protect the finish. Second, turn the gun so that the keyed side is facing down and the barrel of the gun is pointing away from everyone.



**Photograph 1.**

Third, grasp the keyed side with your fingers and pull down while rapping with the screwdriver handle or raw hide mallet, on the lock on the protrusion that the male keyed side goes into. The protrusion is off center, and it is from the side with the most clearance that you want to rap.

I found that this can be done off of the gun, but it goes a lot quicker if it is on one. There is no apparent damage done to the lock or to the finish of the lock. I have used this



method on both the black long and short protrusion style locks. I have one of the older bronze colored locks where the protrusion is shorter, and have been unable to rap it open.

Since using this technique, I saw a safety recall notice by Master Lock concerning these gunlocks at our local Wal-Mart. I purchased one of the supposedly "enhanced" gun locks sold after June 2000, in the new packaging. I was still able to rap it open.

*Jim Holzer  
Wisconsin*

**Editor's Note:** Jim, as far as I know, the recall related to Master models 90TSPT, 90DS&W, 90KADS&W, 90OTS&W and the model 90 which was sold in combination with certain Smith & Wesson and Walther hand guns. The recall DID NOT apply to locks, which have "Milwaukee, Wis. USA" on the rubber pad or, "Made in U.S.A." on the packaging and instruction sheet. The recall was to be posted until November 17, 2000. If any of you have questions about the recall you can contact Master Lock at 2600 N. 32nd St., Milwaukee, WI 532010. Or by e-mail at: [www.masterlock.com](http://www.masterlock.com).



**STRATTEC WINNER:  
Ford Ignition Tip**

On late model Fords, I have encountered several instances where the key buzzer switch has broken and then jammed all the way to the back of the keyway, preventing the customer's key from operating the ignition.

I solved this problem by making a copy of the customer's key and modifying the tip of the key, and the bottom of the blank, so the key will enter the keyway easily. (See *illustration A.*) Then, I take a blank and insert it into the keyway and

gently tap it with a small hammer to force the buzzer switch as far back into the keyway as possible.

After I have forced the buzzer back into the keyway, I use the modified duplicate to turn the ignition to the on position so I can depress the retainer and replace the broken cylinder with a new one. It takes a little wiggling and jiggling to get the cuts to line up properly since this key is a tip stop key, but overall it only takes a few minutes to do the entire procedure.

*Les Williams  
Pennsylvania*



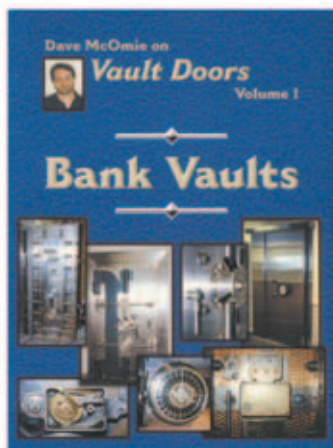
**HPC WINNER:  
Spinner Trick**

A spinner is a valuable tool, but I have not found one that works 100% of the time.

On one occasion, after an unsuccessful spin attempt, I realized I was holding the spinner turned in the direction I had attempted to get the plug to rotate. I wondered if it was possible that some of the pins "slipped" slightly and were held in a partially locked mode by tension.

I inserted a tension tool to keep the tension and removed the spinner.

## Dave McOmie on Vault Doors Vol. 1 & 2

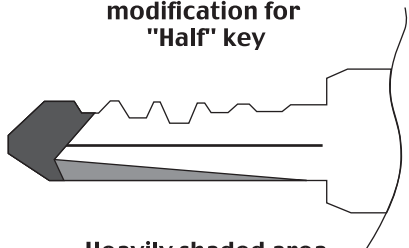


These openings can be a nightmare, but not when you bring Dave McOmie along with you on the job.

[CLICK HERE TO LEARN MORE](#)



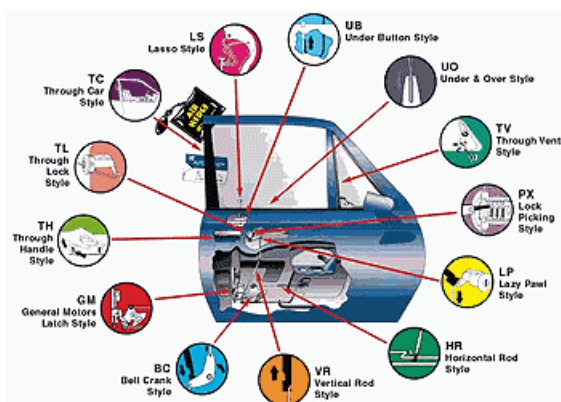
Lightly shaded area  
shows keyblank  
modification for  
"Half" key



Heavily shaded area  
shows keyblank  
modification to  
compensate for  
actuator compressed  
at end of keyway

**Illustration A.**

# How To Open Cars



Arm yourself with the best information possible by learning every known method to open locked cars!

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Then I inserted a rake and voila! The lock opened almost instantly. I figured that when spinning, one pin must have dropped down. I have since successfully gotten locks to turn immediately by using this method after an unsuccessful spin.

If you try this, make sure that after releasing the spinner to turn your hand in the direction of rotation to maintain the tension in case the spinner fails and you need to employ this method.

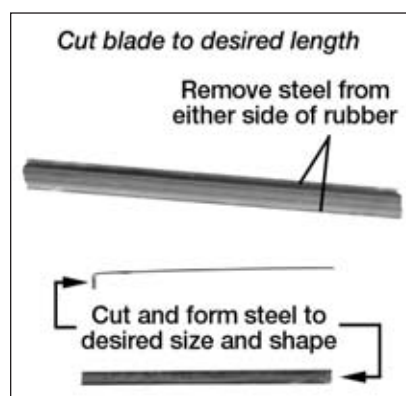
Adrian Slater  
Virginia



SARGENT & GREENLEAF WINNER:  
**Tension Tool Tip**

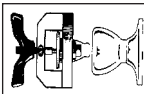
I use the spring steel inserts in windshield wiper blades to make turning tools. I find they can be customized to any job that requires a turning tool. As shown in *photograph 2*, simply remove the steel inserts from either side of the blade and cut and form as needed for the particular job you are working on.

David Green  
Utah



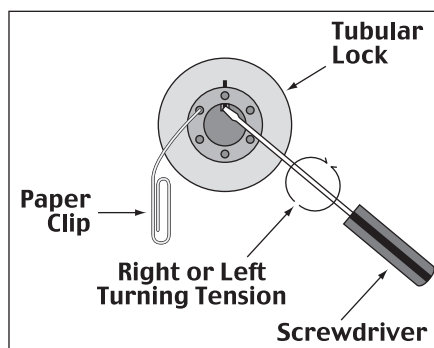
**Photograph 2.**

Editor's Note: Dave, on the average, tension tools cost about a buck-and-a-half a piece. I find it more cost effective to buy mine already made. However, that's what makes this world go around in such an interesting way - we all have our favorite way of doing things!



A-1 SECURITY PRODUCTS WINNER:  
**Tubular Key Pick**

There is a foreign version of the ACE lock that is much smaller in diameter and is commonly found on desks and computers. As far as I know, there are no commercially available picks for these locks.



**Illustration B.**

Here's how I solved the problem of picking one. I insert the tip of a small flat-bladed screwdriver - about 8" long, for leverage - in the slot of the keyway to use as a turning tool. (See *illustration B.*) While applying turning pressure (left or right) with the screwdriver, I use a

bent paper clip to depress the pins to the shearline. There are only four or five pins in the locks that I have encountered and I have about a 90% success rate picking these locks in this fashion. What about the other 10%? My cordless drill makes a great rotary pick!

Joseph Sicari  
New York



ILCO KEY BLANKS WINNER:  
**Masking Tape Memo**

I use both the Determinator and the EEZ on a daily basis. My problem is keeping track of the depths as I am



working. Using a single sheet of notepaper would blow away and a notebook was just too cumbersome. I bought a roll of 2" masking tape and when I'm trying to decode a lock, I tear off a piece about two or three inches long and stick it a few inches above the lock I'm working on. As I decode the cuts on the door lock, I record those cuts on my tape with a felt tip pen to keep from making an impression in the paint.

Once I have decoded the locks and am ready to progression the ignition, I pull the tape off the door and stick it to the dashboard or instrument panel for easy reference. A roll of masking tape only cost a couple of bucks and lasts almost forever.

Clarence White  
Tennessee



**KEEDEKX WINNER:  
Wafer Removal Pliers**

Here's how to make a pair of wafer removal pliers from just about any old pliers you have laying around the shop. All you need is the pliers, some roll pins, a grinding wheel and a Dremel tool, a big hammer for custom shaping of the jaws and maybe a torch.



**Photograph 3.**

*Photograph 3,* shows an example of the tip shape of the tool and how to weld or solder a flat piece of stock that will actually push the wafers out of the lock. Take a piece of flat spring steel about 3/8" wide and cut it with a hook at the end and weld it to the pliers. If you can't weld, drill two holes for the roll pins and attach it with the pins.

One jaw is shorter than the other and it is that jaw that is to receive the wafer removal stud.

Shape, grind or cut a small radius in the opposing jaw and then slot a "V" in the jaw from the tip back about an inch.

To use simply place a plug from a wafer lock in the tool as shown and squeeze the tool together to push a wafer out of the plug.

Leonard Downing, CPL  
Oregon



**TECH-TRAIN TRAINING VIDEO WINNER:  
Hole Saw Trick**

I got tired of using a dowel rod with a nail in the (almost) center of it to mark the strike location when installing locks.

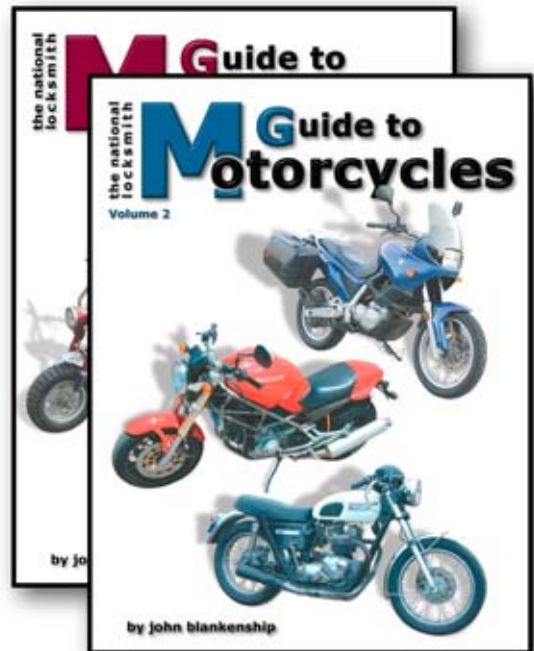
Like many locksmiths I use a 1" hole saw to cut the edge bore in the door and then cut the strike hole after marking it with my dowel and nail. Well, no more!

Now I use my old 1" hole saws as a strike mortiser. Just slip the old saw in the door prep with the teeth facing the jamb, close the door, put a screwdriver against the back of the hole saw and tap the screwdriver with a hammer! A perfect strike location every time!

Tony Triani  
Illinois

Editor's Note: Good one, Tony! Now try leaving a broken pilot bit in the hole saw and you've even got your drill point located as well as the circumference of the hole.

# Guide to Motorcycles Vol. 1 & 2



For years locksmiths have begged  
for a comprehensive service  
manual on motorcycles  
and its finally here!

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SIEVEKING  
PRODUCTS GM E-Z  
WHEEL PULLER  
WINNER:

**Lock Ring  
Compression Trick**

I have found that on some steering columns, to remove the ignition cylinder you must first remove a number of parts such as the horn pad, steering wheel, dust cover and the lock ring retainer. I find the lock ring retainer the most difficult to remove because of the necessity of first having to compress the lock ring.

Using a lock ring compression tool helps. Although I find that occasionally, the legs of the tool, which set out towards the edge of the lock ring, have a tendency to bow the lock ring's outer edges before compressing the lock ring sufficiently to allow removal of the retainer.

To prevent this from happening, I have bent the legs on my lock ring compression tool inward about an inch, which puts the downward pressure nearer the center of the lock ring and in an area of the lock ring that is more rigid than the edges.

To keep the "bend" in the legs of the compression tool, I placed an adjustable radiator hose clamp around both legs and snug the screw down to where the clamp holds the legs in the position I want them to be.

This way, the lock ring can be compressed to a deeper position and give me more room for maneuvering my tools to remove the lock ring retainer.

*George Steiner  
Nevada*

**Major**  
UN MANUFACTURING, INC.

MAJOR  
MANUFACTURING  
PRODUCTS WINNER:

**Kwikset Correction**

I had a customer who tried to install a lock himself and the 2-1/8" cross-bore was off about 3/8 of an inch. After looking at the miscut, I figured that it would be a simple matter to move the hole over to the proper location, put a MAG Instal-A-Lock on the door to cover the miscut and I'd be on my way.

Sounded good, except I forgot my boring jig! So, I found a piece of scrap plywood, cut a 2-1/8" hole 2-3/8" from the edge and I have an emergency jig that would allow me to relocate the misaligned hole.

I lined my homemade jig up with the edge of the door, secured it with a couple of "C" clamps and cut the hole in the proper location. Then I installed the MAG Instal-A-Lock.

I also came away from that job reminding myself to double-check next time to make sure I didn't forget my boring jig.

*Rob Jufer  
New York*



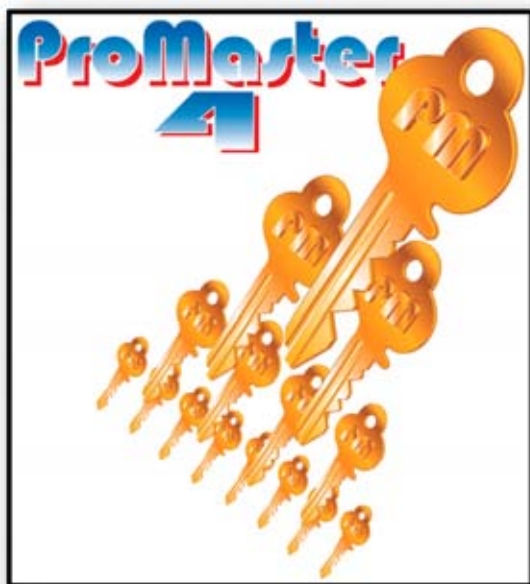
SLIDELOCK'S "Z" TOOL  
OPENING SET WINNER:  
**Opening an American  
2000**

Under the best of circumstances the American 2000 (Hockey Puck) is a difficult lock to bypass when the key has been lost. When in the locked position, this shackless padlock offers little access for picks or drilling. (See illustration C.)

Although the lock is an expensive one (around \$40 retail) I have found the easiest and most economical way to defeat it is to drill for the locking dog and not try to drill the keyway or pick the lock.

In the illustration, I show the drill points for the locking dog(s). A 1/4" hole drilled there will free the pin and

# ProMaster 4



ProMaster 4 is without a doubt, the most comprehensive and easy to use master-key system management tool available anywhere in the world.

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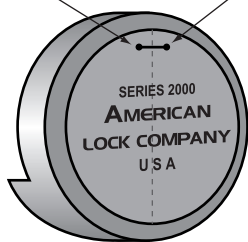


#PM - 5



Measure 1/4" out from center line on cross line and mark for drilling

Measure in 1/4" from edge of lock and make cross mark as shown



Draw line from cylinder side of lock (center of keyway) to opposite side as shown

Illustration C.

allow the shackle to release, thus unlocking the lock. The lock is case-hardened but a decent Cobalt bit makes short work of the drilling.

Ellis Gibbs  
North Carolina



THE SIEVEKING AUTO KEY GUIDE WINNER:  
**Drill Speed Information**

When I have to drill safes to open them, no matter what type of drill bits I'm using, I always use a cutting oil. Once I'm into the hole about an inch, I start adding two to three drops of cutting oil in the hole, which makes the steel easier to cut and makes it necessary to change bits less often.

I use an old nose drop or eye drop bottle to allow me to place the oil where I want it without getting it all over everything. I use soluble oils, sulphated, mineral and lard oil for cutting steel alloys, machined steel and tool steel in that order.

When cutting steel, I synchronize my cutting speed to the size drill bit I use. If the diameter of the bit you want to use and the speed are not listed in the following chart, you can determine the speed/bit ratio by checking for the speeds above or below the size bit you want to use.

Bit Diameter:	RPM:
1/16"	5000 to 6500
1/8"	3000 to 4000
3/16"	2000 to 2500
1/4"	1500 to 2000
5/16"	1000 to 1500
3/8"	500 to 1000
7/16"	300 to 500

By using cutting oil and regulating

your drill speed to the size hole you're cutting, you will save considerably on drill bits.

Nick D. Holleman  
Oklahoma



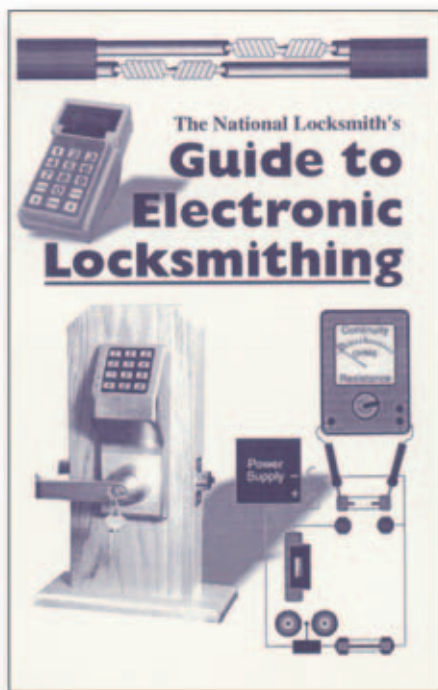
JET KEY BLANKS  
WINNER:  
**Daewoo Key Blank**

I got my first call to generate a key of a Daewoo. While doing this, I found that both the TR40 and the HY12 are good substitutes to make a key for these cars. One key fits all locks.

Donald Martin  
Kentucky



# Electronic Locksmithing



Everyone knows there's big money in selling, installing and servicing electronic security such as mag locks, electronic strikes, and simple access control.

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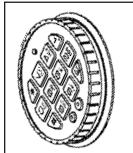


#EL - 1

HIGH TECH TOOLS WINNER:

**Another Acura Key Removal Tip**

In the October 2000 issue of The National Locksmith, Lynn Chambers suggested using a Dremel Tool to cut the head off of an Accura/Honda key that was too short and was trapped in the ignition. I think it was an excellent tip. Yet, I think I have found a better way.



I use a 14" pair of bolt cutters with the jaws sharpened almost to a knife point (a file and a little elbow grease is all it takes), to cut the head off of the stuck

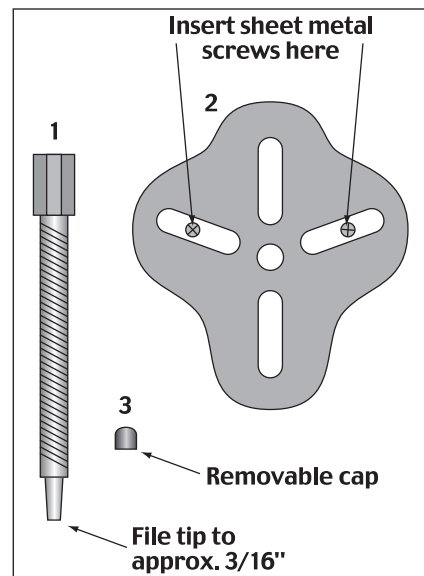
key. There is much less chance of damaging the customer's car with the bolt cutters then there is with a Dremel Tool that can slip and chatter across the finish around the ignition.

*Armando Lopez  
California*

LAGARD WINNER:

**Dial Puller Substitute**

I wanted to pull the dial from an S&G D-300 front reading dial so I could drill into the lock and open the safe. Unfortunately, I had forgotten my dial puller and the shop was over an hour away.



**Illustration D.**

I went out to the truck looking for a solution and found my automotive wheel puller. Looking it over, I decided that with a few modifications, I could make this work for me since I am terrible at "rocking" a dial off with ViseGrips(- I always break the spindle below the face of the door.

At any rate, if you look at *illustration D*, you can see how I filed the tip of my wheel puller after removing the removable "cap" on the end of the screw-turn. Next I removed the center logo disk from the dial and drilled a 5/16" hole into the center of the dial and down to the spindle. Using two self-tapping screws I secured the wheel puller to the dial and began turning the screw-turn on the puller. The dial came off in short order. After drilling the safe and opening it, I was able to replace the dial and logo disk without evidence that the safe had been compromised. And the wheel puller is still usable.

*Rick Latura  
Massachusetts*

**TNL**

# Flat Rate Manual

The  
National  
Locksmith.

## Flat Rate Manual *For Locksmiths*

Safe Work • Car Opening • Key Cutting • Rekeying • Installations • Domestic Autos • Code Keys • Duplicate Keys • Masterkey Systems • Conversions • Key-In-Knob Locksets • Imported Autos • Lockouts • Safe Work • Car Opening • Key Cutting • Rekeying • Installations • Domestic Autos • Code Keys • Duplicate Keys • Masterkey Systems • Conversions • Key-In-Knob Locksets • Imported Autos • Lockouts • Safe Work • Car Opening • Key Cutting • Rekeying • Installations • Domestic Autos • Code Keys • Duplicate Keys • Masterkey Systems • Conversions • Key-In-Knob Locksets • Imported Autos • Lockouts • Safe Work • Car Opening • Key Cutting • Rekeying • Installations • Domestic Autos • Code Keys • Duplicate Keys • Masterkey Systems

By James C. Pein, CPL

Now you can easily "Price for Profit!"

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#FRM - 1

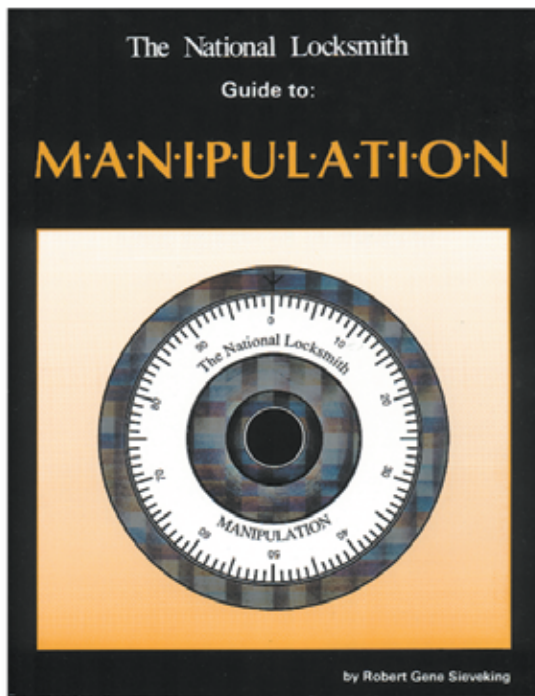


# Road Rally

A showcase of locksmith service vehicles.

If you think your vehicle has what it takes to be featured here, send photographs and descriptions to:  
The National Locksmith, Road Rally, 1533 Burgundy Parkway, Streamwood, Illinois 60107-1861.

**Owner:** Vincent Chestnut,  
Tisbury, MA



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Our home study course guides you on step-by-step process, teaching you everything there is to know about manipulation.

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#MAN - 1



# THE CASH STATION

by Mark Daniel

## Amsec Money Chest

**Safe Manufacturer:**

Amsec

**Safe Size:**

37" Wide, 54" High

**Door Size:**

35-3/8" Wide, 52-1/2" High

**Handle Type:**

L-Style that faces up.

**Handle Location:**

26-1/4" Down from top of door, 8" over from door edge.

**Handle Rotation:**

Clockwise to open.

**Dial Center to Handle Center:**

7-1/4"

**Dial Location:**

19" Down from top of door, 8" over from door edge.

**Number of Door Locking Bolts:**

3 on common bar.

**Door Locking Bolt Locations:**

12-1/4", 20-3/4", 29-1/2" down from top of door.

**Door Locking Bolt Diameter:**

1"

**Door Thickness to Bolt Center:**

3"

**Door Thickness to Lock Case:**

2-3/8"

**Door Thickness to Back of Lock:**

3-1/2"

**Combination Lock Type:**

S&G 6730

**Combination Lock Description:**

Three wheel, key changeable combination lock.



**Combination Lock Case Thickness:**

1-1/8"

**Key Change Tool #:**

S&G U8

**Number of Wheels:**

3

**Driver Location:**

Rear

**Combination Lock Handing:**

Right Hand (RH)

**Drop-In Location:**

98

**Forbidden Zone:**

0 - 20





## Amsec Money Chest

**Combination Lock Opening Procedures:**  
4xL to first number. 3xR to second number. 2xL to third number. 1xR until dial stops.

**Lock Drill Point:**

7/8" out from dial center at 97. Align wheel gates under fence.

**Combination Lock Relock Trigger Type:**

Spring loaded trigger that activates when combination lock cover is removed or punched.

**Combination Lock Relock Trigger Drill Point:**

3/4 inch left of dial center and 7/8 inches down. Grab the relock trigger arm with a hook wire and pull towards you to release.

**External Relock Device Type:**

Spring loaded plunger.

**External Relock Device Drill Point:**

2-7/8" Left of dial center, and 1-3/4" up.

**Special Notes:**

The center of the relocker is 3" in from the face of the door, and 1-3/4" up from dial center (17-3/8" from top edge of door). You can side drill and push it out of the way. There is enough room, and there is no hard plate from the side either.



1. The new Ford Escape.

# The 2001 Ford Escape

by Tony Vigil

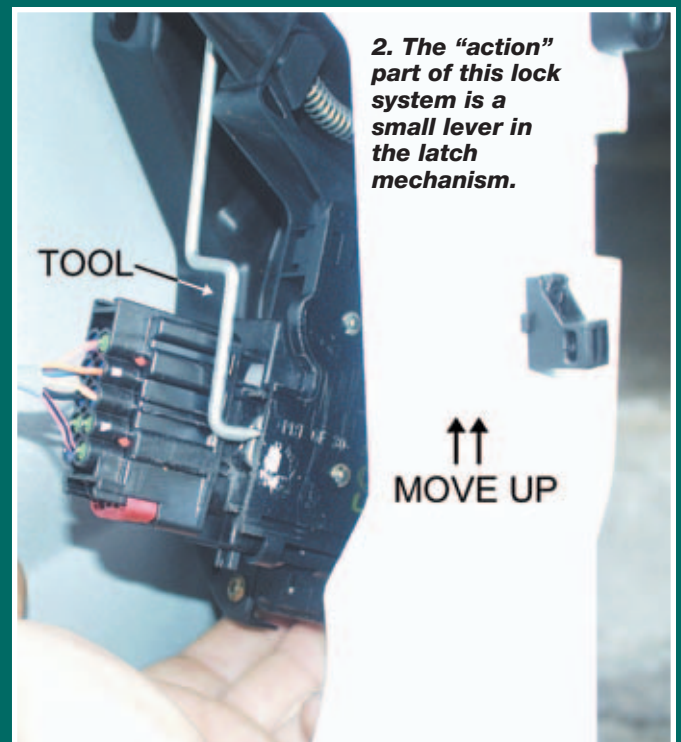
**W**ell, guess what? There is another new SUV on the market for 2001! As if there were not enough Sports Utility Vehicles on the market already, Ford just released the new Ford Escape. (See photograph 1.) The Escape is priced and designed to be positioned squarely at the forefront of the lucrative SUV market.

Ford's product line in the growing SUV market includes the Excursion, which has a fairly simple vertical lock system. It can be unlocked easily using a tool like the High Tech Tools number 47 'S' tool.

Next in line is the Ford Expedition. The Lincoln Navigator is the sister product and both the Navigator and the Expedition are built on the Ford F150 chassis. They can both also be opened fairly easily using the High Tech Tools number 47 'S' tool.

Ford also manufactures the Ford Explorer and the Mercury Mountaineer. Each of these Fords also feature simple and easy to reach vertical lock buttons which are simple for most trained locksmiths to unlock.

Apparently, however, Ford still was not satisfied with its

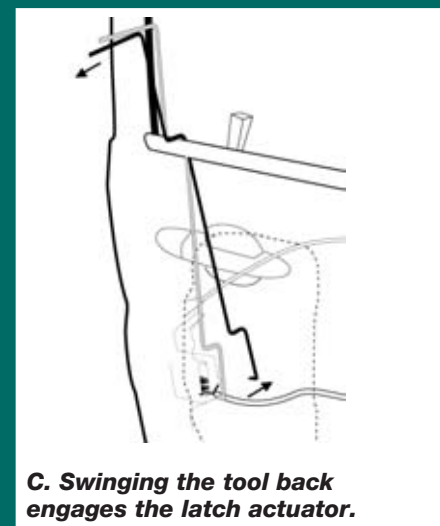
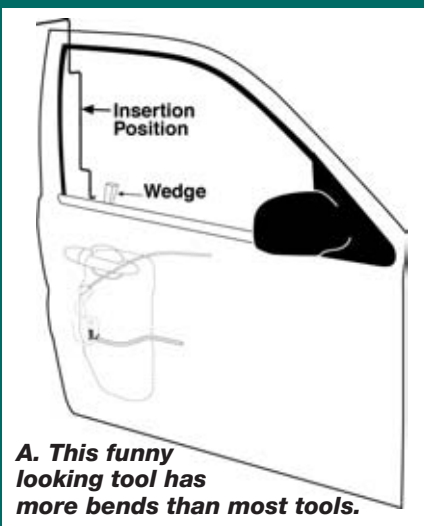
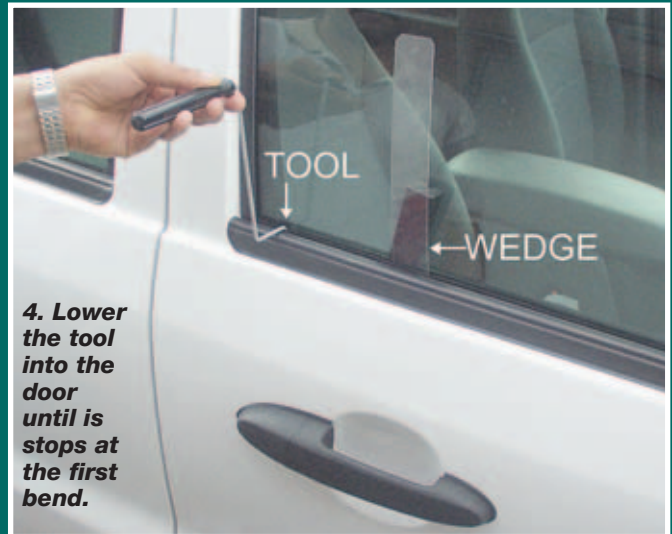


winning lineup. As if it were preparing for an appearance on an episode of Sesame Street, Ford has decided to begin the names of its entire line of SUV's with the letter 'E' (Excursion, Expedition, Explorer and now the Escape). As far as lockouts go, 'E' has also stood for 'easy.' That is until the Escape.

Ford has been leading the industry in cabled linkage, where there are no lock rods, lock linkages or even bell cranks to attack with traditional opening methods. Unlike



*Continued from page 130*

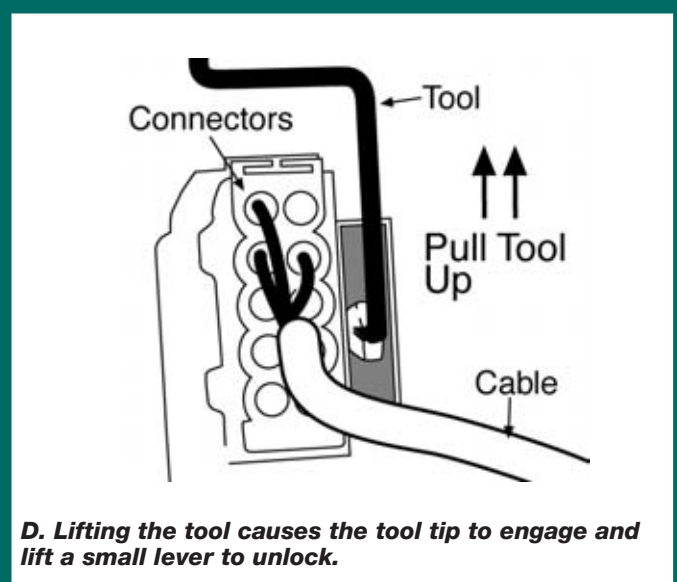


the rest of the SUV lineup, Ford has implemented a more sophisticated locking system in the Escape, a lock system more commonly found on one of their cars. In fact, the Escape is more difficult to open than the average Ford car.

There are no lock rods on this vehicle to be accessed with conventional opening methods. Even the most seasoned pro cannot 'eye-ball' this one to figure out how to open it. The lock system for the Escape is 100% cable controlled and there are no gaps for openings, which might allow access. This means that unlike other cabled doors which allow enough room between the door glass and door panel to use an inside access type of tool (under the window tool), the Escape door is simply too tight to insert a tool with comfort. If you try to use an under with window opening method, chances are better than average that you will end up breaking the window.

If there is no lock linkage or rod, and the inside access (under the window) methods may shatter the glass, then how do you possibly get into this soon to be best selling vehicle? High Tech Tools has devised a unique, safe and reliable method for unlocking this vehicle. The "action" part of this lock system is a small lever in the latch mechanism which is unguarded, but located deep in the corner of the door. (See photograph 2.)

The lever is behind the connector for the door lock



actuator, which is part of the latch mechanism. This makes the lever extremely difficult to reach. This "action" area is the only place where an opening can be performed, but it is small and practically inaccessible. To address this problem, High Tech Tools created a unique tool, which is specifically designed for the Ford Escape. This funny looking tool has

more bends than most tools, but each one was custom measured and made just to open this vehicle. (See illustration A.)

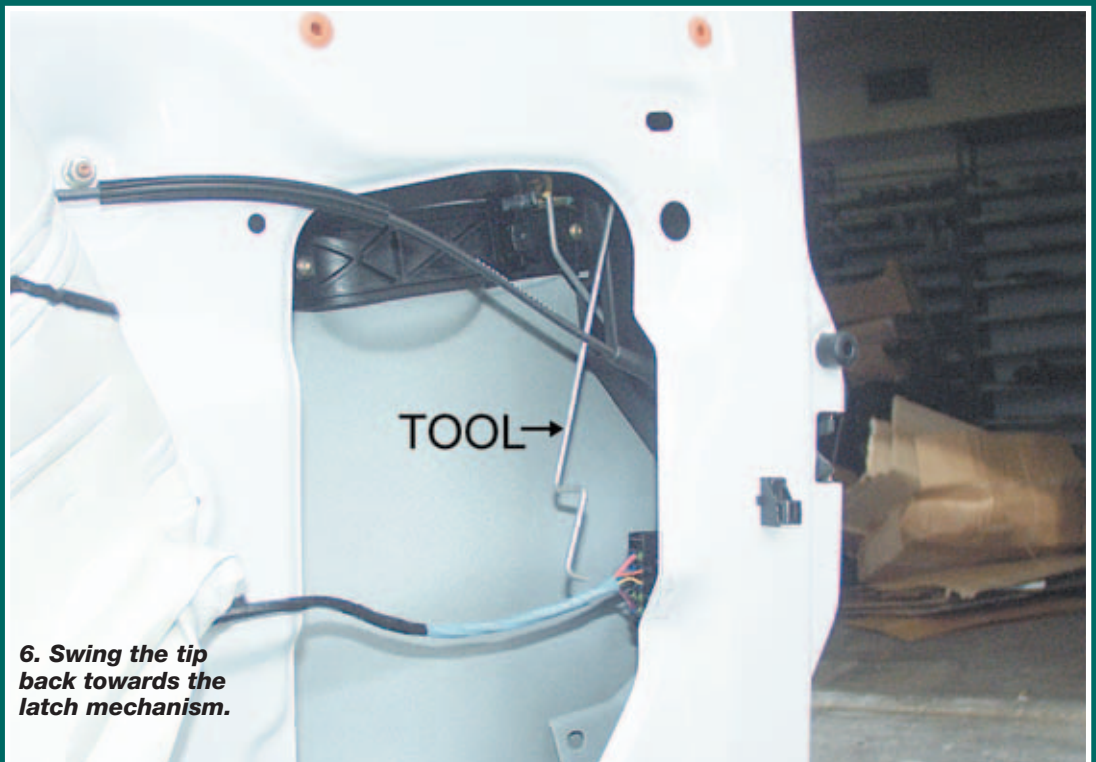
The basic idea behind this opening is simply to lift a small lever located inside the latch mechanism at the bottom of the door. Lifting this lever unlocks the car door. While the idea is simple enough, the tricky part is actually getting to the lock lever itself. This new tool is designed to basically fall into place to make the lockout easy.

To perform this opening, first insert a strip saver and wedge into the passenger side door to provide working room for the tool. Creating a sufficient gap is not a problem since there is no guard mechanism at this point in the door.

The tool needs to be fished in by turning it one-way and then the other. (See photograph 3.) The reason for the twisting is because of the number of bends in the tool. Tool entry is probably the most difficult part of the entire process. Insert the tool just in front of the door handle and then lower into the door until it stops at the first bend close to the tool handle. (See photograph 4.) At this stage it is necessary to swing the tip of the tool towards the front of the vehicle. (See photograph 5.)

Swinging the tool towards the front of the vehicle allows the tool to clear the cables and actuator in the door. (See illustration B.) Moving the tip of the tool towards the inside of the vehicle puts you in a position to swing the tip back towards the latch mechanism where it needs to be. (See photograph 6.)

In essence, you just lower the tool into the door until it stops. Then move the tip of the tool towards the front of the car and then back towards the rear to access the lever. (See illustration C.)



At this point, the only thing left to do is to lift the tool up. Lifting the tool causes the tool tip to engage and lift the small lever, thus unlocking the door. (See illustration D.) While the lever is tucked away in the corner of the door, the precisely measured bends in the tool mean there is really no fumbling around at all.

For more information, contact High Tech Tools at 305-649-1207 or 1400 SW First Street, Miami, FL 33135. High Tech Tools can also be found on the Internet at [www.HighTechTools.com](http://www.HighTechTools.com). Circle number 302 on Rapid Reply.





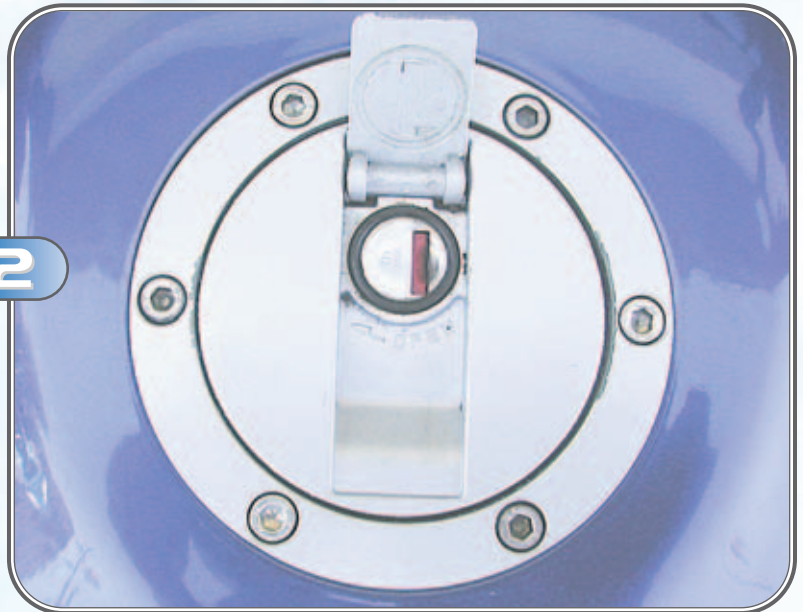
I. The F650 is a deluxe dual-sport motorcycle with a 650cc single cylinder engine. Its long-travel suspension and skid-plate allow it to handle rough terrain much better than a standard street model. Originating a key for this bike is not difficult.

by  
John Blankenship



2

The gas cap lock is a good source to obtain all six cuts.



### Impressioning

This is a good lock to impression. It marks the blank well and the wafers are strong.

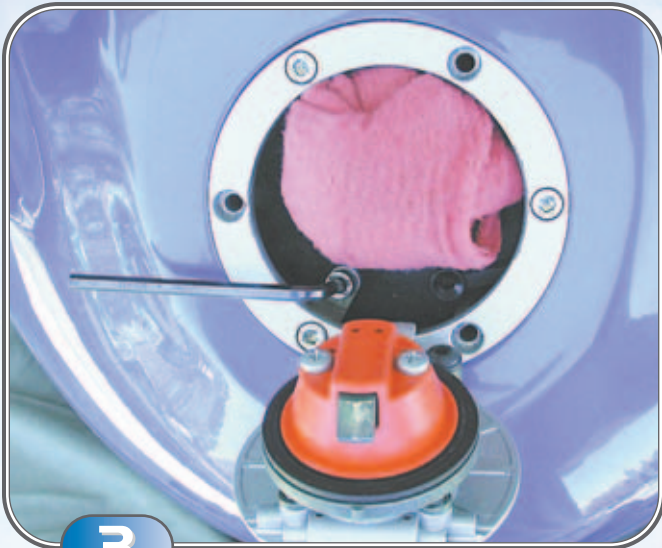
Reading. This is a difficult lock to read due to the design and color of the wafers. Only a small part of each wafer is visible in the keyway and they are the same color as the inside of the keyway.

### Codes

There are no codes anywhere on the motorcycle.

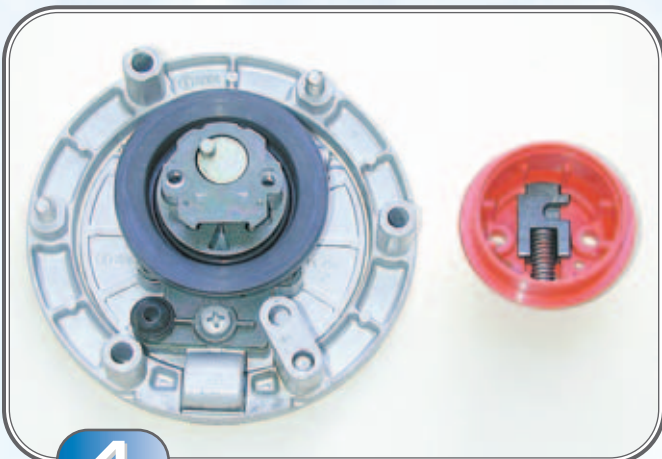
### Disassembly

Begin by picking the gas cap lock 90 degrees clockwise and raising the cap. This lock picked easily using a rake but you have to know where to rake. This shows the gas cap as it appears when you are sitting on the seat. Insert the tension wrench in the top of the keyway and apply tension clockwise. This will open the dust shutter so you can see the first tumbler. It is in the bottom of the keyway on the left side and is not easy to see. This is because it is not brass; it is the same color as the inside of the keyway. Also, it does not extend all the way across the keyway; it is only on the left side. Use the pick to depress the first tumbler and you can tell where to rake because all six tumblers are inline on the bottom/left side of the keyway.



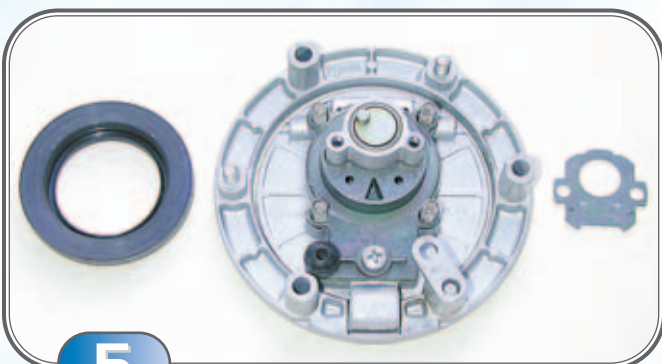
**3**

Put a clean rag into the filler neck to prevent the bolts or anything else from dropping into the tank. Use a 4mm hex wrench to remove four bolts. Three of the bolts are removed and the wrench is in the fourth one. Then you can take the gas cap assembly to a bench and remove the two Phillips screws on the bottom of the cap.



**4**

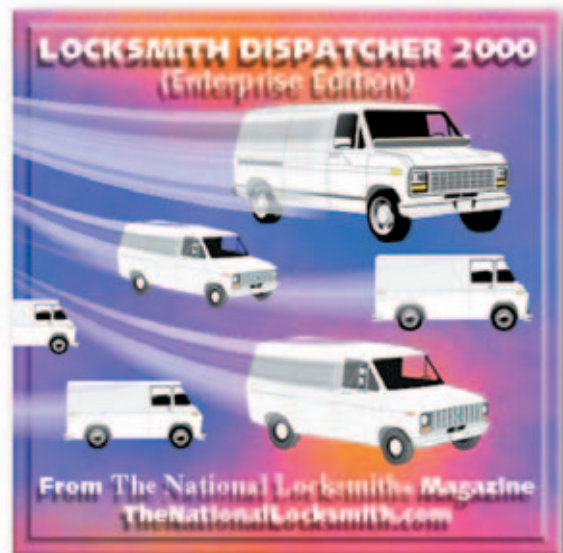
After removing the two Phillips screws you can remove the locking bolt housing along with the locking bolt and spring.



**5**

The backing plate and sealing ring have been removed. Also remove the four springs and store them in a safe place.

# Locksmith Dispatcher 2000

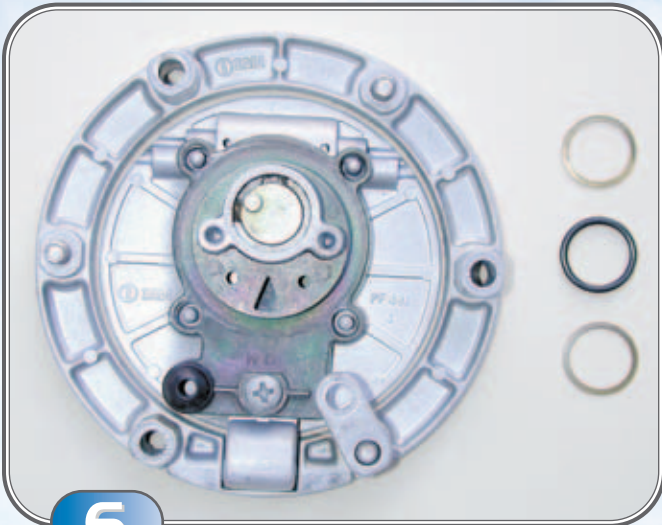


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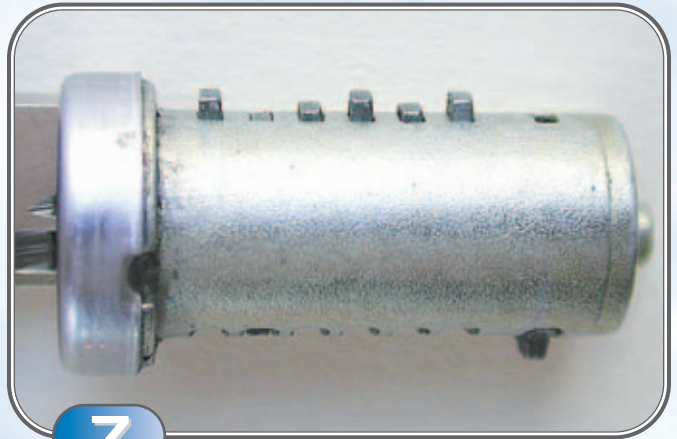






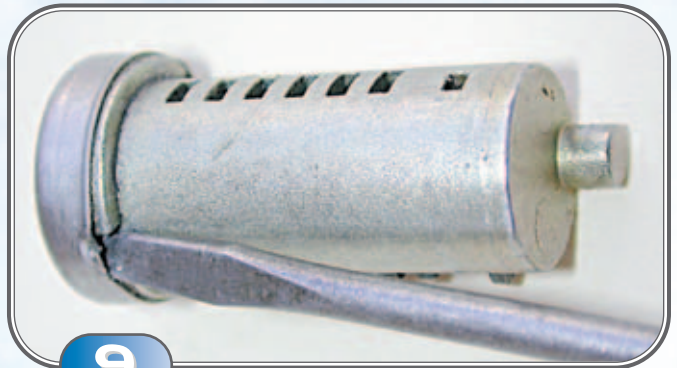
6

Remove the metal ring, O-ring, and second metal ring from around the back of the plug. The retainer can now be seen on the upper side of the plug. Depress it, push the plug out the front of the housing, and remove the rubber ring from around the face of the plug. You do not have to be concerned about the wafers falling out.



7

The gas cap plug contains all six tumblers arranged on one side of the keyway plus the retainer. A blank inserted into the plug shows the cuts are 312323. A search using key code software reveals that the code is 8827.



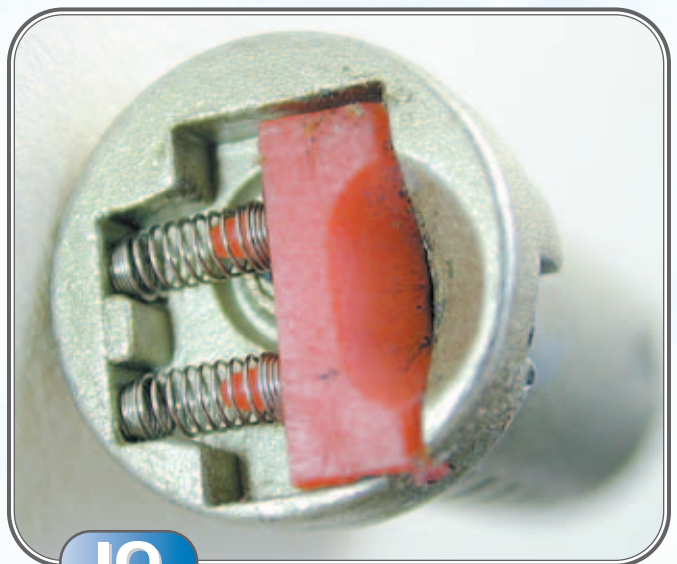
9

You have to remove the facecap from the plug before you can remove the tumblers. Use a small screwdriver to pry out both crimps and you can pull the facecap off.



8

The original BMW key is shown on the top. On the bottom is a Silca ZD23RCP with cuts of 312323 that works all three locks on the motorcycle. The plastic bow of the ZD23RCP hit the jaws of my ITL 950 slightly before the shoulder contacted the shoulder stop. I filed a flat on both sides of the plastic bow until the shoulders made contact with the stop.



10

Now you can remove the plastic dust shutter and two springs. Be careful and don't let the springs fly away.



11

Now you can see the end of a tiny brass rod that has to be removed.



12

The brass rod holds the spring-loaded tumblers and retainer in the plug so hold them down to release the friction pressure on the rod. Then tap the face of the plug on a bench and the rod will slide out far enough to grab.



13

From left to right are the tumblers with depths of 312323 and the retainer. The brass rod that fits through the slots in the center of the wafers is also shown.

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**14**

Replace the rubber ring around the face of the plug with one of the two tabs aligned with the retainer. You cannot insert the plug with the retainer aligned with the locking slot or it will hit the end of the slot and stop. You need to align the retainer to the right of the locking slot, depress it, and insert the plug. Then turn it counter-clockwise to the locked position.



**15**

The ignition lock is located between the handlebars and instrument panel. The lock is shown in the OFF position, which means the

ignition is off but the steering is not locked. To lock the steering turn the handlebars to the right or left, push the plug in, and turn it 90 degrees counter-clockwise to the LOCK position. Turning it a little farther to the 'P' position turns on the lights so the bike can be seen if it is necessary to park next to the road at night. It is not necessary to push the plug in when turning from LOCK to OFF.



**17**

Once the two bolts are removed you can pull the lock down and out of its housing. There is a cable guide attached to the top of the lock housing that can now be slid off of the cylinder. Don't forget to replace it and make sure the control and electrical cables are inside the guide arms when you put the lock back on.



**16**

A 6mm hex bit socket is shown being used to remove one of the two bolts securing the ignition lock. The fairing is in the way so it is necessary to use a long extension, or short extensions joined together, so that the ratchet is just above the front fender.



**18**

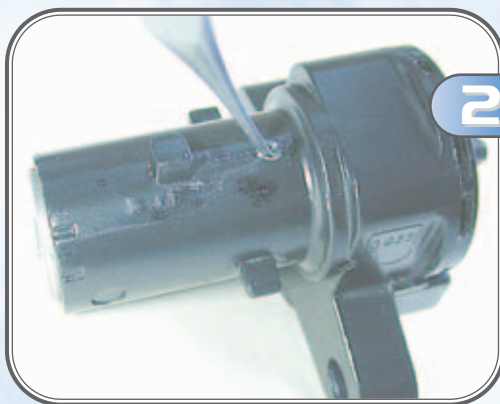
Remove the two Phillips screws that hold the switch to the back of the lock and pull the switch off. The lock can now be taken to a bench for disassembly.





19

Remove the plastic sleeve by twisting a screwdriver in the locking slots to unlock them and then twist another screwdriver against the back of the sleeve to force it forward. There is another locking slot on the other side of the cylinder. The two locking slots are different widths so the sleeve cannot be replaced the wrong way.



20

Drill a small poke hole 1.25 inches (31.75mm) from the face of the plug in line with the keyway in

the position shown. Use a punch or similar tool to depress the retainer and pull the plug out the front of the cylinder. You do not need to worry about the tumblers falling out. The lock needs to be in the OFF position in order to remove the plug due to lateral locking grooves in the lock that will trap the retainer when in the LOCKED position even if the key has the tumblers at the shearline. If the retainer becomes trapped it is necessary to drill another poke hole to depress the retainer again and push the plug back in. Don't ask how I found that out. If you were to continue to pull the plug out, the retainer would become trapped two more times. I was able to pick this lock from LOCK to OFF without too much difficulty by raking the tumblers on both sides of the keyway.

The ignition plug contains all six tumblers staggered



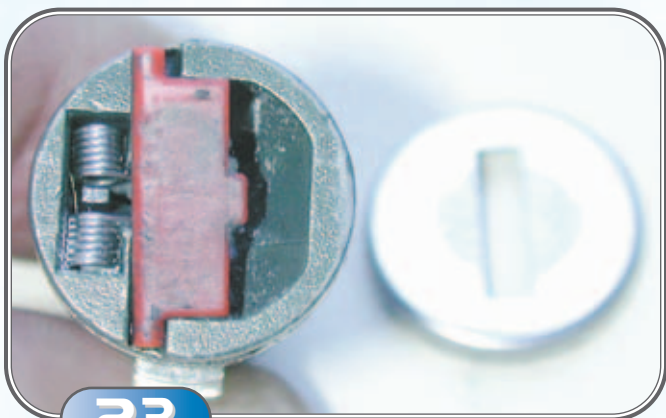
21

on both sides of the keyway plus the retainer. The odd spaces are on one side of the keyway and the even spaces are on the other. A blank inserted into the plug shows the cuts are 312323. When you insert the plug back into the cylinder you need to use a screwdriver to turn the tailpiece halfway between OFF and LOCK. Then align the retainer in that position, depress it, and insert the plug. You can then turn it to the LOCK or OFF position.



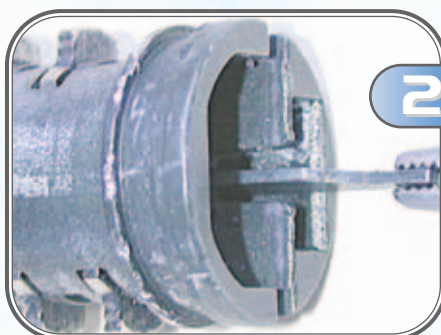
22

You must remove the facecap from the plug in order to remove the tumblers. Remove the plastic ring and use a small screwdriver to pry up the crimps so you can pull the facecap off.



23

Remove the dust shutter and spring. The rectangular end of the tumbler retainer bar is visible in the gap between the two coiled sections of the spring.

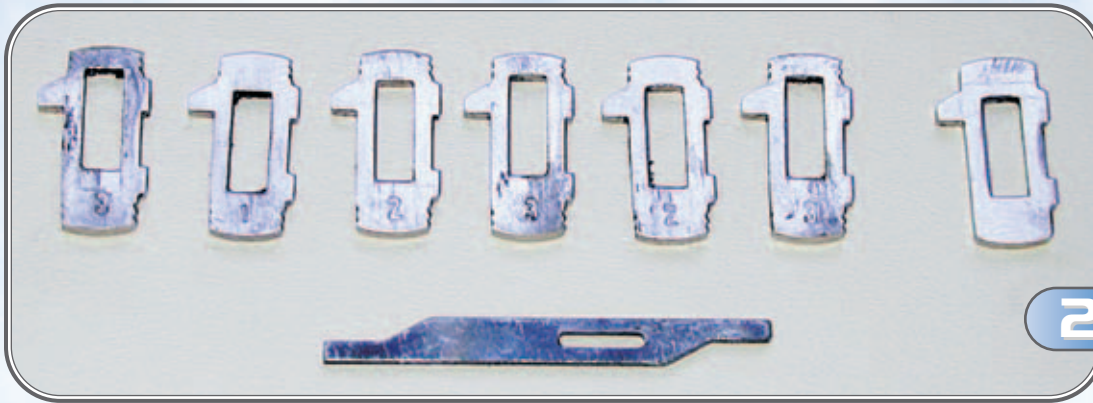


24

Grasp the end of the tumbler retainer bar with forceps or tweezers and pull it out of the plug.

Pay attention to which end to insert first when reassembling. Do not allow the tumblers and retainer to spring out and get lost or mixed up.





The tumblers are numbered per depth and from left to right are 312323 and the retainer. The tumbler retainer bar is shown on the bottom.

**25**



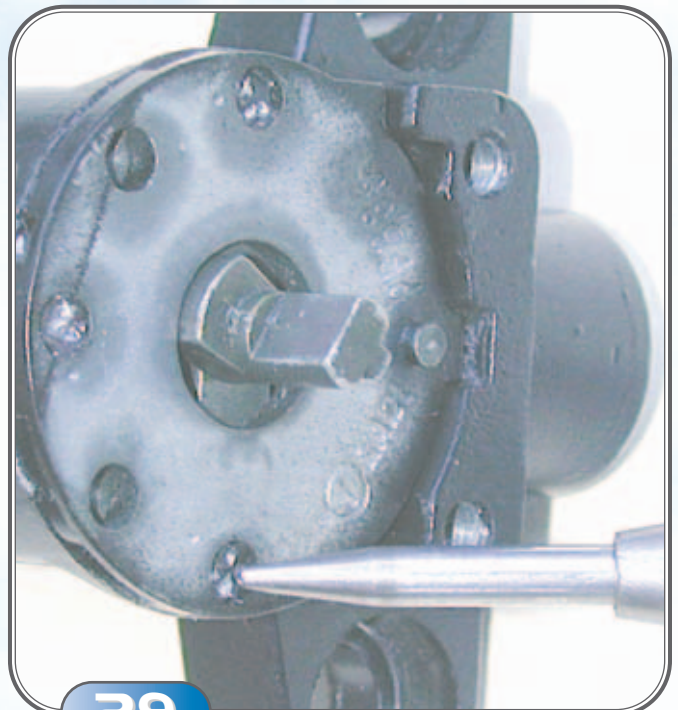
**26**

To disassemble the steering lock, use a small screwdriver to pry off the backing plate. Pry next to the three staking posts to avoid breaking it.



**27**

Turn the plug so the tailpiece lines up with the slot in the locking bolt activator as shown in the photo. You can now pull the activator out of the housing.



**29**

I put a small dab of Kwik Weld on each of the three staking posts and put the backing plate back on. Then I used a spring-loaded center punch to flare out the staking posts.



**28**

Once the activator is removed you can slide the locking bolt down and out of the housing. Then you can pull the tailpiece out. The plug retainer is now visible on the upper side of the plug.

*Continued on page 154*



Continued from page 152

30

The seat lock is located on the right side of the motorcycle under the rear of the seat and is a good source to obtain all six cuts. Turn the plug 90 degrees clockwise and lift the back of the seat up and then pull it back to remove it. This lock is mounted so that the tumblers are in the upper/right area of the keyway if you need to pick it.



32

Drill a small poke hole on the centerline of the bottom of the cylinder 1 3/64" (26.6mm) from the face of the plug. Use a punch to depress the retainer and pull the plug out the front.



31

Once the seat is removed you can see two 8mm bolts that secure the seat latch assembly to the frame. An 8mm socket is on one and the other is visible to the right. Remove the bolts and the assembly is easily removed.



34

This frontal view of the cylinder shows the locking slot in the top center. If you insert the plug with the retainer aligned with this slot the retainer will hit the back of the slot and stop. Align the retainer with the area just to the right of the locking slot. Then insert the plug and when it makes contact with the tailpiece turn it counter-clockwise until it slides the rest of the way in.

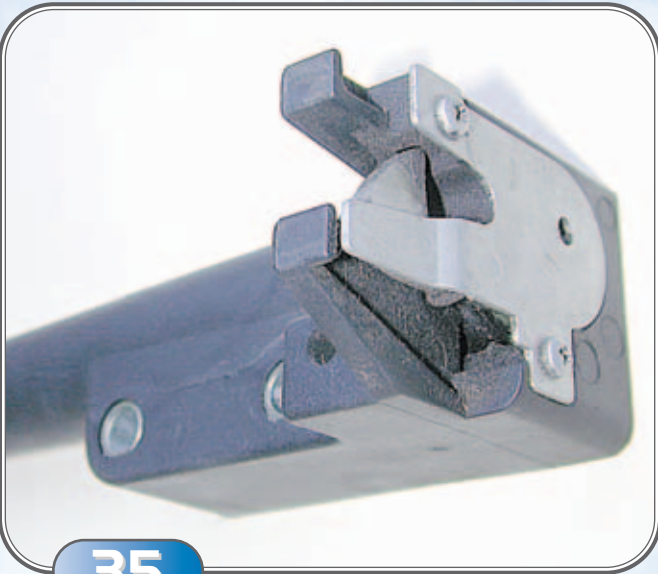


33

The seat lock plug contains all six tumblers on one side of the keyway plus the retainer. The tumblers are held in the plug by a tiny brass rod just like in the gas cap lock.

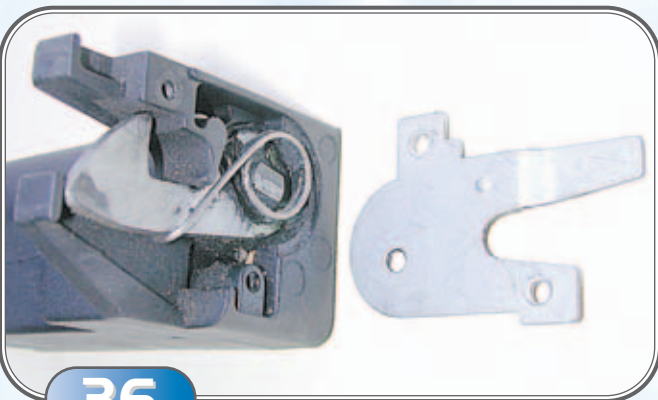






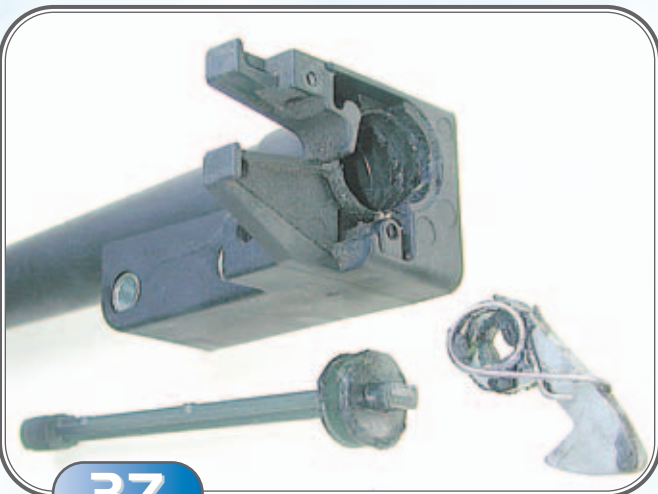
**35**

Remove the two Phillips screws and backing plate in order to disassemble the seat latch.



**36**

Pay close attention to how the latch and spring are mounted before you pull it out of the housing.



**37**

Once the latch is removed you can pull the tailpiece out of the housing. At this point you can see the plug retainer by using a light. The retainer is recessed 5" inside the housing and I was unable to depress it. It is far easier to drill the poke hole.

**Note #1.** The gas cap and seat locks with the off-center keyway will accept Silca ZD16RP and ZD22RBP blanks as well as the wider grooved Silca ZD23RCP and ZD24RDP. However, the ignition lock with the center keyway will only accept the Silca ZD23RCP and ZD24RDP.

**Note #2.** The 1997 to 1999 F650 was built by Aprilia and uses Zadi locks. Beginning in 2000 the F650 is built by BMW and uses Neiman locks. So the 2000+ F650 uses the X59 blank with codes of H12353P-H53425P just like other BMW models beginning in 1995.

**Note #3.** The saddlebag/luggage locks will be covered in another article.

**Codes:** 800I-9554

**Blank:** Silca ZD23RCP or ZD24RDP

**Spacing:** 1=.146, 2=.256, 3=.366, 4=.476, 5=.587, 6=.697

**Depths:** 1=.301, 2=.276, 3=.250, 4=.224

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## How To Pick Locks



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**E**lectronic Access Control (EAC) is one of the fastest growing segments of the security industry. As a locksmith, you are in an outstanding position to profit by installing and servicing EAC products. The key to EAC survival is technical knowledge. If you try to wing it, you will look bad in front of customers and employers.

The best investment you can make in your business, or in your career as a technician, is a commitment to learn. Nothing will save you more time - or make you look better - than a solid understanding of electronics and EAC concepts.

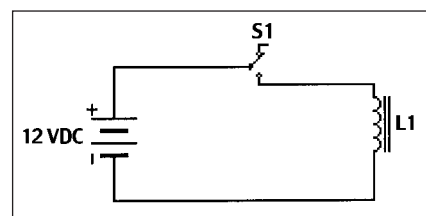
This is the first in a series of articles designed to get new EAC technicians up and running fast. If you already have a background in electronics, this article will be a review at best. But if you are just starting out, you will gain knowledge that you can take on the job today and see an immediate improvement in your ability to install and service EAC equipment.

### The Basic Circuit

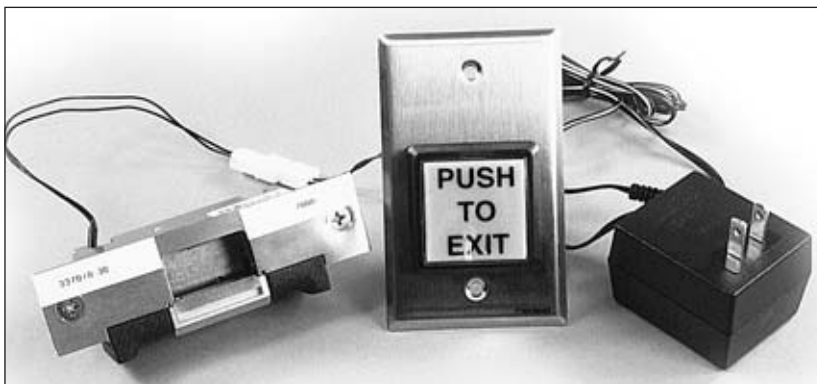
The circuit we will be discussing is shown in *Illustration A*. It is the schematic of the actual circuit. *Photograph 1*, shows the electronic components used in the circuit, consisting of an electric strike, request to exit switch, and plug-in power supply. This is the simplest circuit you will encounter in your EAC work. If you understand it, you are well on your way to a solid grasp of electronics.

### Components

Start by getting familiar with the components of the circuit. The part labeled 12VDC on the schematic represents a battery. We are using this



**A. A schematic of the actual circuit.**



**1. The components used to complete the circuit.**

As a competent technician, your working electronics knowledge should cover at least these eight areas:

1. The definition of an electrical circuit.
2. The difference between AC and DC.
3. Troubleshooting with a multi-meter.
4. How solenoids, coils and electromagnets work.
5. How relays and switches work.
6. How to calculate current draw and use fundamental electronics laws.
7. How and why to ground equipment.
8. How to use proper surge and ESD protection.

Don't worry, the list is not as formidable as it may look right now. Let's jump right in and look at the first item on the list.

symbol to represent a source of DC power - in this case, a plug-in power supply. (Representing all of the components inside of our power supply would go beyond the scope of this article.) The part labeled L1 represents the electric strike in the schematic. L, in electronics jargon, is short for inductor and the electronic component inside of a strike is an inductive load. The part labeled S1 in the schematic is a switch. In this case, it is a request to exit button. Finally, the lines in the schematic represent the wires that connect these parts together.

You must have a complete circuit for your system to work. This may seem obvious, but if you get used to tracing the path of current from one terminal of the power supply through

# BASIC ELECTRONICS

part 1



by  
**William C. Deutsch**



the device, and then back to the opposite terminal, you'll be way ahead of the game when you start adding devices like relays and extra power supplies. Get in the habit of tracing current flow.

Looking at the schematic in *illustration A*, try to trace a line from the negative side of the power supply, through the inductor, and back to the positive terminal. Do you have a complete circuit? The answer is no. The circuit is broken at the switch. To complete the circuit you need to press the exit button, which closes the switch. This is exactly how a remote release system works; when a receptionist depresses a button, current leaves the power supply, passes through the switch, opens the electric strike, and then returns to the power supply. As soon as the button is released, current stops flowing and the strike locks.

Now that you understand how this circuit works, let's look at the various pieces and what they do. In the process, you'll get a handle on the concepts of voltage, current and loads.

#### ***The Power Supply***

The power supply provides Voltage. Voltage is the force necessary to move the keeper on the electric strike. This type of force (electromotive force) is measured in volts. Every circuit must have a source of voltage.

When you set up an EAC circuit, remember that your power supply voltage must match the voltage rating of the device you need to energize. Voltage is force. 12-volt DC devices require a 12-volt DC power supply or they will not receive enough force to operate. If you connect a power supply with a lower voltage, the device will not function properly, if at all. If you connect the device to a higher voltage power supply, you will probably destroy it. So, make sure that your voltages match.

#### ***The Switch and Wires***

The switch and wires allow Current to flow through the circuit. Current is the flow of electrons. Our power supply is packed with electrons and has the potential to supply 12 volts to the electric strike. But we have to get the electrons to the strike first. When we close the circuit with our switch, the electrons can flow.

Picture a garden hose with a spray nozzle attached. When you first turn

on the spigot, the hose stiffens because it becomes packed with water, but no water flows. The hose is now like an open electrical circuit: it has voltage waiting to be used, but no current flow. Once you squeeze the spray nozzle you have both pressure (voltage) and flow (current). This water analogy is the most common way to illustrate the relationship between voltage and current. Voltage is the water pressure, while current is the actual flow of water.

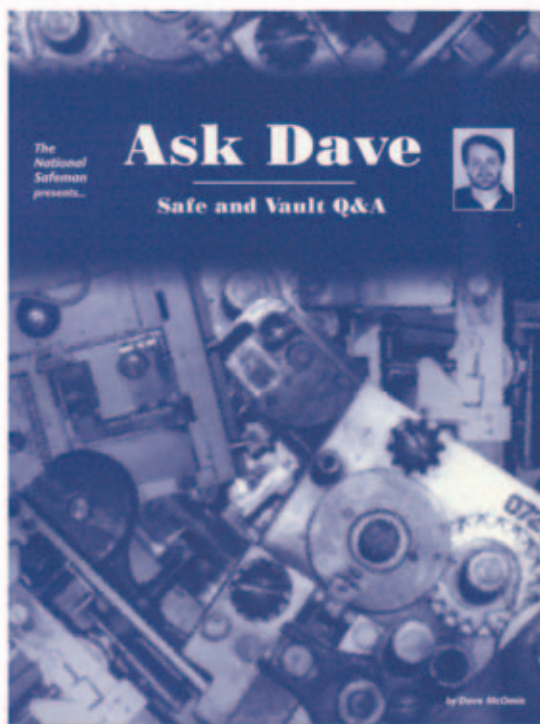
All devices in your circuit will require a certain amount of current. This current is measured in Amps.

Unlike voltage, current does not have to match the rating of the device. The electric strike in our picture will consume .45 Amps of current. Our power source can supply up to 1 Amp. This is not a problem since the strike will only use as much current as it needs to operate.

On the other hand, if you tried to connect this strike to a power supply that can only provide .25 Amps, the best you can hope for is to blow a fuse on the power supply.

When assembling an EAC circuit, not only must you make sure that the voltages match, but you must also

## Ask Dave



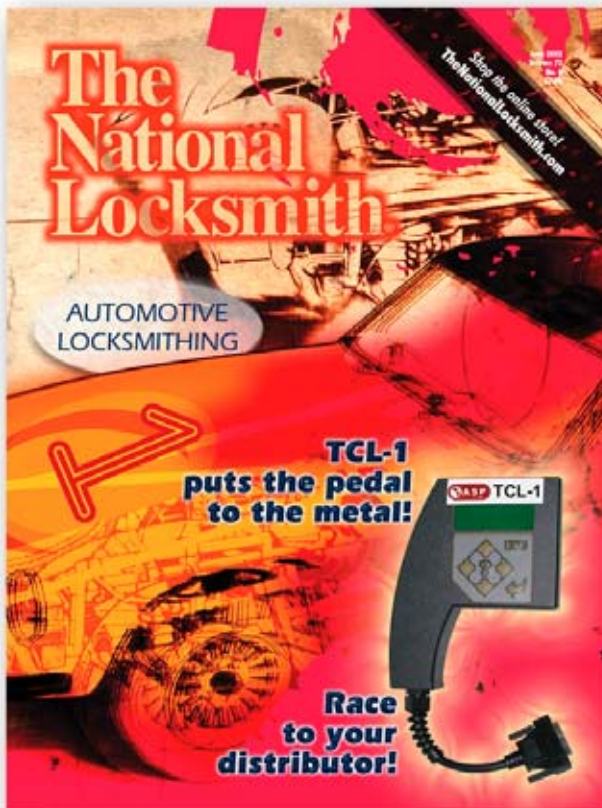
You asked. He answered. This is safe and vault Q&A with an attitude.

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#AD - 1

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make sure that you do not try to draw more current than your power supply can provide.

### *The Electric Strike*

The electric strike in our circuit is referred to as a load. A load causes the voltage in a circuit to drop. This is extremely important for safety reasons. If you were to connect only a wire between the two power supply terminals, current would flow, but that current would return to the power supply at full force. Heat would build up rapidly and if there were no fuse installed, something would start to burn. We call this a short circuit and it can be very dangerous to you and your equipment.

Not only must a circuit have a load, but also that load must be properly matched to the power source. When, as we have already discussed, the voltage rating of your load matches the voltage rating of your power supply, and the current rating of your load does not exceed the current rating of your supply, the circuit will function properly. A 12 volt-DC, .450 Amp electric strike is an appropriate load for a 12 volt-DC, 1 Amp power supply.

### *Designing an EAC Circuit*

In summary, here are some principles to keep in mind the next time you need to assemble an Electronic Access Control (EAC) circuit:

1. Remember that you must have a complete circuit for your system to work. A complete circuit means that electricity must be able to flow out of one power supply terminal, through the load, and back into the opposite terminal.
2. The voltage rating of your power supply must match the voltage rating of the device you connect to it.
3. You cannot safely exceed the current rating of your power supply. If you have a .25 Amp power supply, do not connect a device that requires .45 Amps. You can, however, connect an electric strike that requires less current than your power supply can give. A .25 Amp strike can be connected to a 1 Amp supply.

*In future articles, we will take up some of the other areas of fundamental electronics knowledge. However, if you use what you've already learned about basic circuits, you are well on your way to profiting from the EAC market!*

**TNL**



# BUSINESS BRIEFS

## **Lockwood Revived Thanks To Gulfport Industries**

Lockwood Architectural Hardware has been taken over by Gulfport Industries (a hollow metal door/frame/components manufacturer). Lockwood has expanded its product line together with Gulfport Industries. These expansions include high-end exit devices, key-in-levers, door savers (wrap around plates), latch protectors, surface bolts, flat goods, thresholds, weather stripping, hinges, hollow metal doors and frames, assorted parts and components and many more.

For more information call: (800) 446-1141 or Fax: (603) 826-4186.

## **Master Lock's Catalog Now Online**

Master Lock's product catalog is now online at [www.masterlock.com](http://www.masterlock.com). The catalog can be searched in three different ways, including by application, such as Home/Yard, Industry/Job Site, School/Office/Play; by product category such as Airbag/Steering Wheel Locks, Combination Padlocks or Backpack/Luggage Locks, or by product number. Animated demonstrations show the product in action.

## **Ultra Hardware Receives U.S. Rights for Gainsborough**

Ultra Hardware Products has received exclusive selling rights for the United States for Gainsborough Hardware Industries, which manufactures residential high-end interior and exterior locksets. All products will continue to be sold under the Gainsborough Hardware Industries name. Ultra currently has more than 130 employees and carries 5000 products, including a wide range of residential and

commercial hardware.

## **New Dynalock Sales Rep.**

Dynalock has appointed Amsler & Associates as sales representatives for Contract Hardware, Locksmith and Access/Security accounts in Arizona. Their main office is in Tempe, Arizona, (480) 839-6799.

## **Safemasters Grows Again**

Safemasters Co., Inc. acquired the assets of Corbett Lock & Key Co., Inc., a security company operating out of Madison, New Jersey. Safemasters provides locksmith, safe, CCTV, access control and door installation service from its 15 locations in eight states. Safemasters SM Services division provides nationwide service in markets where Safemasters does not have a company location, with the help of about 2000 service partners. Safemasters plans in the next five years to add at least 10 locations in new markets thru acquisitions. By 2005 Safemasters plans to have at least 25 locations in 18 states.

## **IR Joins with CISA**

A joint marketing agreement has been arranged between the Ingersoll-Rand Security & Safety Sector and CISA. CISA employs 2900 associates in 70 countries worldwide, and has a major operation in Italy, France, Spain Venezuela. It manufactures locks, cylinders, safes, padlocks, panic hardware and electronic locks under the brands of CISA, Bricard and CISA Cerraduras. Ingersoll-Rand's Security & Safety Sector markets architectural and security hardware under the brands of Schlage, Von Duprin, LCN, Locknetics and others.

## **Fire King Sells Winchester Gun Safe Division**

Fire King International has announced the sale of its Winchester Gun Safe Division to Granite Security Products, Inc. of Fort Worth, Texas. Winchester is the only product they manufacture exclusively for the consumer market and it became clear that Fire King couldn't give the brand the attention it deserved. Employment at Fire King will not be affected.

## **Dor-O-Matic and IR Security & Safety**

Dor-O-Matic door control products are bringing new strength to the market under the umbrella of IR Security & Safety. Dor-O-Matic surface closers, access operators and electromagnetic holders can now be easily integrated with other world-class IR products. Included in the Dor-O-Matic closer line are the SC60, SC80 and SC90 series surface closers. Offering a full range of closer designs for applications from standard duty to commercial duty applications in high traffic areas. The Asent is an electromechanical operator that is easy to install and incorporates the features and functions required by today's market.

## **Dual Technology Siteline Lockset**

Medeco Electronic Access Control solutions are now available in a stand-alone, battery-powered unit. The Siteline Intelligent Lockset combines the flexibility of electronic key control with the security of an exclusive keyway and integrates them into a single credential that can be used for both electronic and mechanical key access. Programming and auditing are a snap with the powerful and intuitive Windows based software and

the exclusive Medeco Portable Database design. The lockset stores the last 800 transactions, time and date stamped, in a non-volatile memory with exceptionally easy and prompt retrieval utilizing the exclusive Medeco Portable Database design.

## **Security Lock Increases Sentrol Inventory**

The complete line of Sentrol mounting contacts is now in stock at Security Lock Distributors. Included are surface and recess types, overhead door styles, roller/plunger units with wire leads, steel door terminal, and request-to-enter PIR contacts. High security contacts with armor cable, miniature surface units and many other styles are also available for immediate delivery. In addition, Security now also stocks state of the art Sentrol smoke detectors, carbon monoxide alarms and acoustic glass break sensors.

## **2nd Annual Frenzy Conference**

In only its first year the Forensic Sciences & Crime Scene Technology Conference & Exposition (Frenzy) has become the industry's leading event as the most comprehensive showcase for the exploding marketplace of forensic and investigative technology. Frenzy's unique focus is on the newest technologies, leading vendors of equipment, product and services that facilitate criminal and civil investigation, apprehension and prosecution - and the thousands of users of this technology. This years Frenzy Exposition is being held May 15-17, 2001 in Washington D.C. 

# KEY CODES

## Timberline 100TA-999TA

Manufacturer: Timberline  
Code Series: 100TA-999TA

**Key Blanks:**

Ilco: 1043J

Ilco EZ: IL11

Jet: IL360

Taylor: 41J

Number of Cuts: 5

M.A.C.S.: 2

Key Gauged: Shoulder

Center of First Cut: .137

Cut to Cut Spacings: .020

Cut Depth Increments: .092

HPC 1200CMB

Code Card: C29

Jaw: A

Cutter: CW-1011

Gauge From: Shoulder

HPC 1200PCH (Punch):

PCH Card: C29

Punch: PCH-1011

Jaw: A

Silca UnoCode

Card Number: N/A

HPC CodeMax

DSD #: 373

Jaw: A

Cutter: CW-1011

Curtis No.15 Code Cutter:

Cam-Set: N/A

Carriage: N/A

Framon #2:

Cuts Start at: .137

Spacing: .092

Block #: 1

Depth Increments: .020

Cutter: FC9045

Key Clamping Info:

A-1 Pack-A-Punch

Quick Change Kit: N/A

Punch: N/A

Die: N/A

ITL 9000 & 950

Manufacturer ID: N/A

**Spacings:**

1 = .137

2 = .229

3 = .323

4 = .417

5 = .509

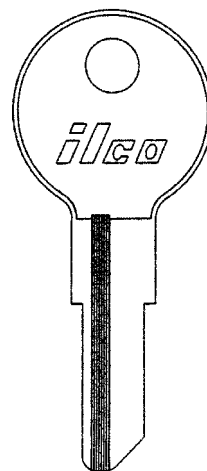
**Depths:**

1 = .248

2 = .228

3 = .208

4 = .188



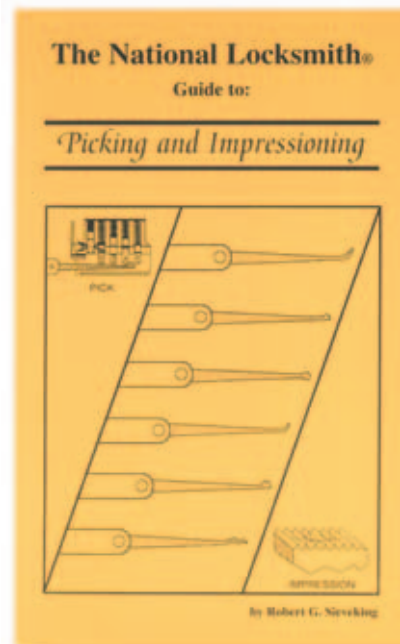
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107TA	33313	132TA	13313	157TA	13124	182TA	12442	207TA	32142	232TA	23231
108TA	23113	133TA	22342	158TA	23131	183TA	22424	208TA	21312	233TA	21314
109TA	31331	134TA	22314	159TA	42424	184TA	33123	209TA	23121	234TA	33113
110TA	21131	135TA	11331	160TA	21242	185TA	31143	210TA	42443	235TA	42434
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116TA	13112	141TA	33134	166TA	13133	191TA	12242	216TA	31311	241TA	11314
117TA	34243	142TA	21142	167TA	22313	192TA	23123	217TA	34424	242TA	12424
118TA	23313	143TA	32313	168TA	34342	193TA	42442	218TA	13143	243TA	31124
119TA	13113	144TA	31322	169TA	12342	194TA	32242	219TA	12314	244TA	33142
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122TA	21331	147TA	31332	172TA	32424	197TA	33121	222TA	13121	247TA	13242
123TA	21342	148TA	43442	173TA	31233	198TA	31313	223TA	11313	248TA	13144
124TA	31214	149TA	33242	174TA	23442	199TA	43342	224TA	23342	249TA	31324



## Timberline 100TA-999TA

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251TA	31134	303TA	33331	355TA	32243	365TA	22212	375TA	22114	385TA	32343
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255TA	13342	307TA	23311	359TA	21132	369TA	22143	379TA	13324	389TA	13434
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259TA	22142	311TA	33311	363TA	12232	373TA	44323	383TA	44224	393TA	21244
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262TA	23314	314TA	13223								
263TA	31242	315TA	32112								
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## Picking & Impressioning



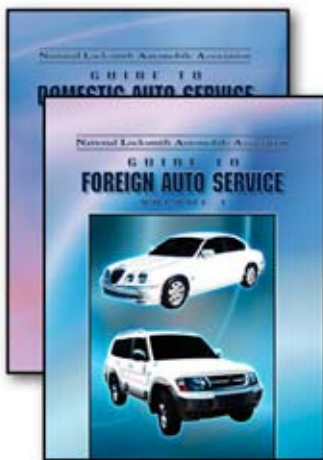
Here is the most complete book ever published on picking and impressioning locks! You will have everything you need to know about how to open almost every kind of lock that can be picked.

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#PI

## NLAA Guide to Domestic Auto Service

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## Timberline 100TA-999TA

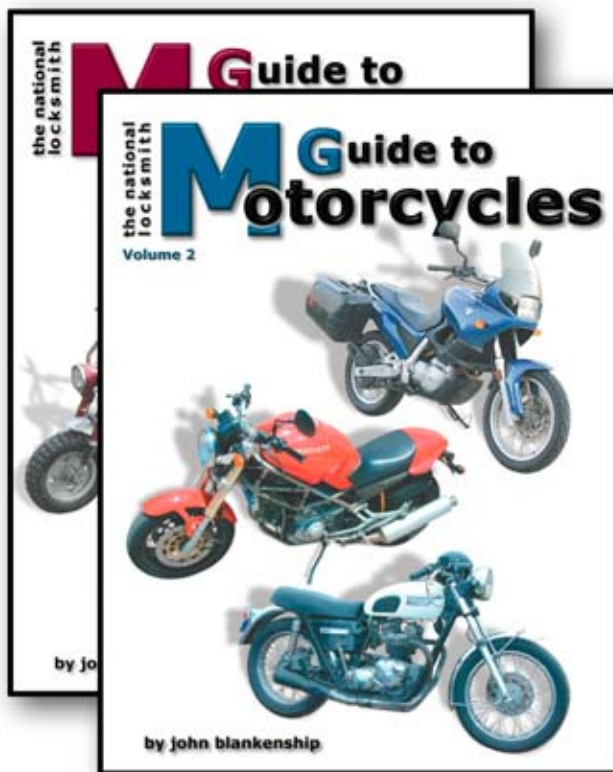
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399TA	13433	451TA	43222	503TA	24432	555TA	32213
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412TA	12443	464TA	21434	516TA	34232	568TA	43224
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416TA	23323	468TA	43322	520TA	34223	572TA	22123
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445TA	21432	497TA	32212	549TA	12143	601TA	24422



## Timberline 100TA-999TA

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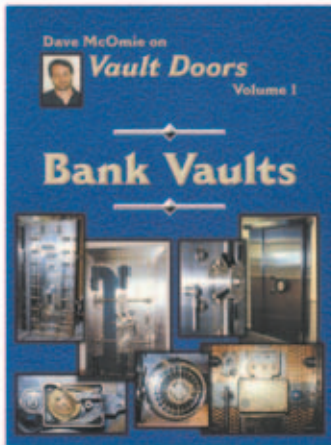
## Guide to Motorcycles Vol. 1 & 2



For years locksmiths have begged for a comprehensive service manual on motorcycles and its finally here!

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These openings can be a nightmare, but not when you bring Dave McOmie along with you on the job.

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## Timberline 100TA-999TA

802TA	14431	854TA	34411	906TA	34313	958TA	24133
803TA	13421	855TA	34142	907TA	21341	959TA	11341
804TA	24313	856TA	23431	908TA	24331	960TA	14142
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**INL**



# THRU THE KEYHOLE

## A Peek at Movers & Shakers in the Industry

### ATTENTION MANUFACTURERS AND DISTRIBUTORS:

Would you like your company and products to be profiled in *Thru The Keyhole*? Please call Editor, Greg Mango, at (630) 837-2044.

### Arm-A-Dor Offers Effective Affordable Protection

On August 24, 1992, Hurricane Andrew slammed into the U.S. coastline, pummeling South Florida with winds of 175 mph, leaving 50 people dead, thousands homeless, and causing property damage in excess of \$25 billion. With entire communities wiped out and insurance rates skyrocketing, authorities launched an immediate crack down on building code omissions. Andrew's powerful winds and massive destruction also forced Dade County's building inspectors, life safety officials and lawmakers to look for new ways to increase the resistance of buildings to damage from typical hurricane force winds of as much as 150 mph or more.

One particular action taken by Dade County officials directly impacts professionals in the door and hardware industry. The Metropolitan Dade County Office of Code Compliance has granted its first and only component hurricane approval rating to Sargent & Greenleaf's Arm-A-Dor secure panic exit hardware, designed for employee and other back of store exits.

This approval can mean significantly increased sales for those in the distribution and installation business, not to mention tremendous savings and goodwill among customers for whom we solve a very real and potentially expensive problem. Let me offer some background that will help you capitalize on the component hurricane approval rating of the Arm-A-Dor.

In a prototype code that will likely set the precedent for other coastal areas, Dade County has implemented an extremely tough -and controversial - test standard for wind resistance. Each door assembly is impact tested (a 2x4 is shot at the door from a pneumatic gun) and then cycle tested (opened and closed) before it can pass the test. In most cases, only those assemblies that have been tested together (that is, a specific hollow metal door and frame installed with a specific combination of hardware) achieve hurricane approval rating.

Seeing this need and opportunity, Sargent & Greenleaf, Inc., of Nicholasville, Kentucky, successfully tested its Arm-A-Dor high security exit device and received a component approval listing. What this

component listing means is that Arm-A-Dor can be used in lieu of the hardware the door and frame assembly was originally tested and approved with, and will still meet Dade County's stringent hurricane code. Arm-A-Dor is the only component listed exit device on the market today that has passed Dade County's rigorous criteria.

Arm-A-Dor not only safeguards against hurricanes, but also secures the property against forced entry attacks and assures life safety at the same time. Made of 12-gauge telescopic steel tubing, Arm-A-Dor is the back door lock combining the high security of a metal drop bar with an easy-exit panic push bar for life threatening situations. It is the only exit device on the market that has also passed the UL burglary-attack test (UL 1034), offering protection from would-be burglars before a storm strikes and from looters after the storm. While a common 18-inch prybar can easily defeat most other drop bar-type exit devices, the revolutionary design of the Arm-A-Dor utilizes the strength of the massive latch bar across the face of the doorframe. It is bolted through the door with Grade 5 carriage bolts and hardened steel sleeves, and has a 1 1/2" steel bar extending over both sides of the interior doorframe. This effectively bolts the door to the frame yet still releases the door with one simple smooth push of the touch pad.

Once installed, Arm-A-Dor requires no special preparation or set-up in advance of the storm, yet offers maximum protection from hurricane force winds. Arm-A-Dor offers water-resistant alarm and automatic re-locking options and comes with a five-year manufacturer's warranty. In addition to its hurricane approval and UL listing, it also meets the life safety codes of Underwriters Laboratory and the National Fire Protection Association. Standard model installation takes about an hour and attaches to almost any existing exit door. **TNL**



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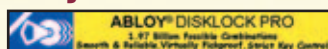
[www.1-800-UNLOCKS.com](http://www.1-800-UNLOCKS.com)

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[www.a-bsafecorp.com](http://www.a-bsafecorp.com)

### Abloy® DiskLock Pro



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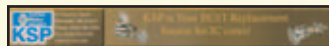
[www.hpcworld.com](http://www.hpcworld.com)

### International Locking Devices, Ltd.



[www.gatelock.com](http://www.gatelock.com)

### KSP



[www.iccore.com](http://www.iccore.com)

### KustomKey



[www.kustomkey.com](http://www.kustomkey.com)

### MAG Security



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### Major Manufacturing



[www.majormfg.com](http://www.majormfg.com)

### McDonald DASH Locksmith Supply



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### Meilink



[www.meilinksafe.com](http://www.meilinksafe.com)

### Monaco Lock



[www.monacolock.com](http://www.monacolock.com)

### National Auto Lock Service, Inc.



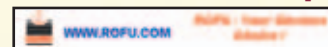
[www.laserkey.com](http://www.laserkey.com)

### Omaha Wholesale Hardware



[www.omahawh.com](http://www.omahawh.com)

### ROFU International Corp.



[www.rofu.com](http://www.rofu.com)

### Security Resources, Inc.



[www.techtrainproductions.com](http://www.techtrainproductions.com)

### ShatterGard Security Window Film



[www.shattergard.com](http://www.shattergard.com)

### Sieveling Products Co.



[www.sievelingprodco.com](http://www.sievelingprodco.com)

### Tech-Train Productions



[www.techtrainproductions.com](http://www.techtrainproductions.com)

### TekTone



[www.tektone.net](http://www.tektone.net)

## Jensen Tools

<http://www.jensentools.com>



Jensen Tools Inc. has a variety of goodies to stagger the imagination. Locksmiths love nothing better than toys, and this web site is going to simply blow you away. Different sections of the site include new products, tool kits, cases, test equipment, computer, wire, telecom, hand held tools, power tools, soldering, storage, handling, work stations, lighting, shop supplies and accessories.

Whew, that is a mouthful! Plus the site is so easy to use, colorful and is a pleasure to use. A popup menu allows you to search for tools by manufacturer if you don't want to browse the various categories. Plus ordering online is fast and simple.

One word of warning is to brew a pot of coffee before logging on to Jensen's site. You'll want to stay a while!



Manufacturers and distributors... join the high profile locksmith web site and you'll be featured here!  
Call Jeff Adair (ext. 15) or Debbie Schertzing (ext. 16) for details. (630) 837-2044



Taking  
Industry Products  
for a

## TEST DRIVE!

I don't know about you, but my garage is full of some rather expensive tools and equipment, not to mention vehicles. Too often, garage security is overlooked in the scheme of security, yet it is often an easy target for thieves. Everyday, lawnmowers, snowblowers, riding tractors, weed eaters, blowers, tools, bicycles, ladders and everything else imaginable, equating to thousands of dollars is stolen from poorly secured garages. The garage is a favorite target for neighborhood thieves and an area that should be given serious security attention.

The overhead garage door has always been easy to overcome, whether it was fitted with an overhead door closer or not. This wide passageway is not only easy to access, it also contributes to the easy removal of items of choice. If you have a customer truly concerned about securing this vulnerable passageway, Major Manufacturing offers a solution.

### PRODUCT:

The Garage Blok is a Jimmy-Proof shield designed for overhead garage

# GARAGE BLOK

by major manufacturing

doors, warehouse doors, and many other specialty applications. Once installed, it is almost impossible to defeat without serious damage occurring.

### FEATURES:

The Garage Blok incorporates a hardened steel bolt and built-in lock shield reducing the risk of physical attacks. Once locked in position, the padlock shackle is protected from twisting, prying or cutting. There is a 5/8" hardened steel locking bolt featuring a centered point for pinpoint drilling accuracy of the strike locator. Each unit weighs in at a hefty 2-1/4 lbs. Of solid steel, with a 3/16" steel housing that is plated in zinc chromate. The Garage Blok is anchored with four 5/16" carriage bolts with washers and nuts supplied for mounting. The Garage Blok can not only be locked in the secure position, it can be locked in the open bolt position as well to prevent theft of the padlock or the door being inadvertently locked. The unit is available in both right and left side models (which must be specified) and is easy to install.

### INSTALLATION PROCEDURES:

Choose a mounting location on the inside edge of the door and mark the center of one mounting hole and drill a 21/64" hole through the door. Install one carriage bolt, washer and nut. Square the Garage Blok to the door and drill the other three mounting locations, installing the carriage

bolts, washers and nuts as well. Finally, tap the locking bolt against the frame to center mark the strike location. Drill a 3/4" hole at that location and press in the strike plate. Installation is complete. All you need to supply is the padlock.

### PRICE:

The suggested dealer price of the Garage Blok is \$17.05 each. That's an awful small investment to protect that fancy Honda lawnmower, Craftsman tool set with drills, sanders, saws and other goodies?

### CONCLUSION:

The Garage Blok comes in both right-hand (model A500R) and left-hand (model A500L) configurations. Only one is needed to secure a door, however, by installing one on each side would require knocking the entire door down to defeat. This unit is built like a tank, like most Major Manufacturing products are. In fact it is probably a little overkill. However, if someone is serious about securing an overhead garage door, warehouse door or other vulnerable threshold, the Garage Blok will definitely do the job.

For more information on Major Manufacturing products contact:

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### IN SUMMARY:

**DESCRIPTION:** The Garage Blok is a Jimmy-Proof shield designed for overhead garage doors.

**PRICE:** \$17.05

**COMMENTS:** It's built like a tank.

**TEST DRIVE RESULTS:** For serious garage door security, the Garage Blok will do the job.

